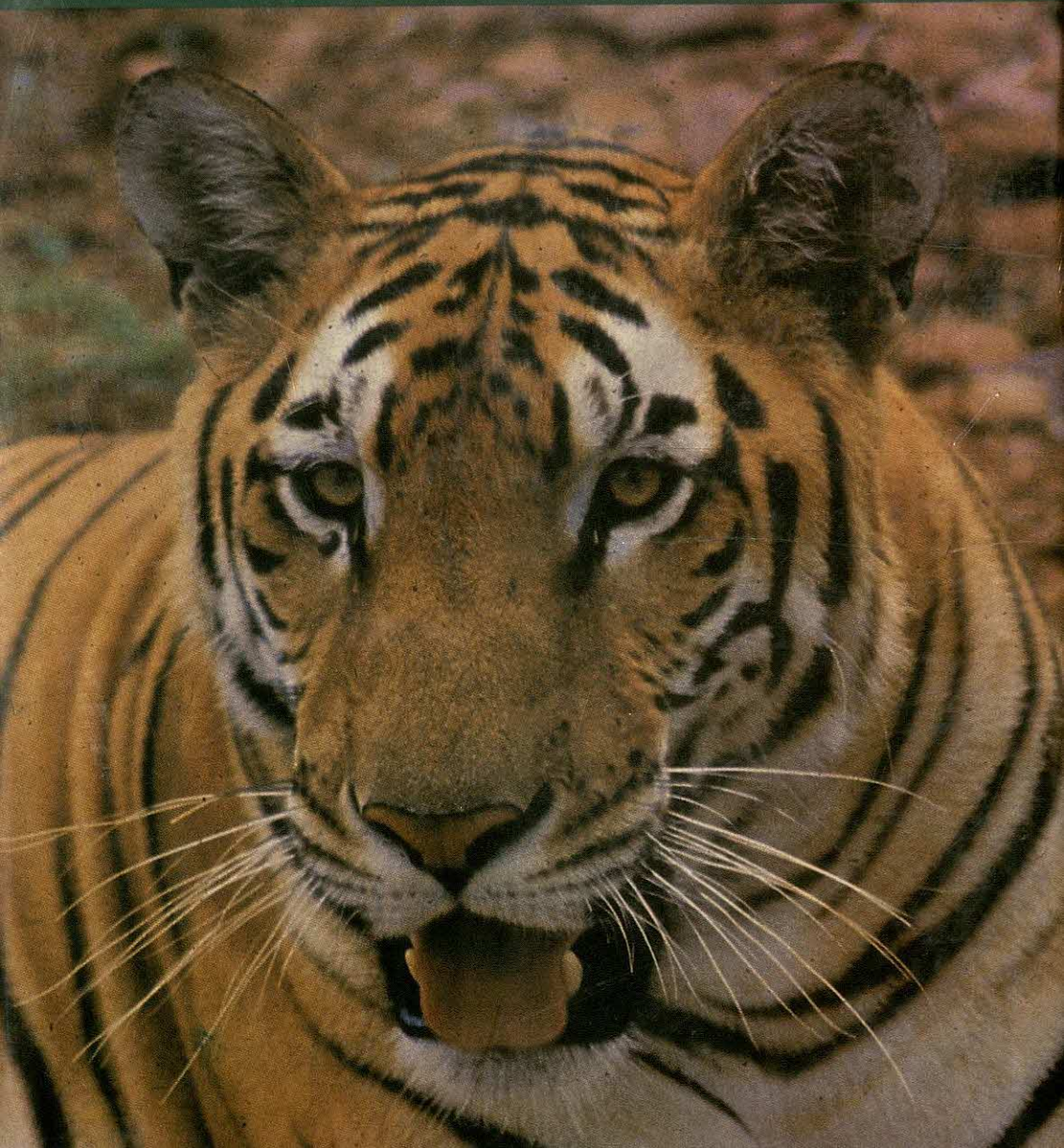


THE WILD LIFE OF INDIA

E.P. GEE

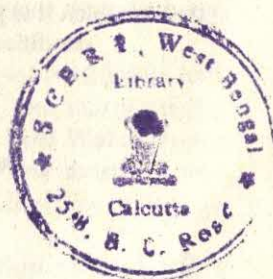


THE WILD LIFE OF INDIA

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E. P. Gee

*with a foreword by
Jawaharlal Nehru*



An imprint of
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To my friends
The wild animals of India

W.E. R. West Bengal
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ed. No. 5262

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GEE

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Foreword

Wild life? That is how we refer to the magnificent animals of our jungles and to the beautiful birds that brighten our lives. I wonder sometimes what these animals and birds think of man and how they would describe him if they had the capacity to do so. I rather doubt if their description would be very complimentary to man. In spite of our culture and civilisation, in many ways man continues to be not only wild but more dangerous than any of the so-called wild animals.

Nature is said to be red in tooth and claw, and life is precarious in the forest. The strong prey on the weak and the weak develop subterfuges and camouflages to protect themselves. But this eternal way of the forest is due principally to the quest for food. Man does not eat man, but he kills him for other purposes; and even where he does not kill the body, he kills the spirit. We are strange mixtures of good and evil, of civilisation and barbarism, of the divine and the base. We talk in one language and act in another way. We hold aloft noble ideals and shout many slogans, but in our behaviour we belie them. We talk of peace and our manner of doing so is often aggressive and warlike.

In India, perhaps even more than in other countries, there is this difference between precept and practice. In no country is life valued in theory so much as in India, and many people would even hesitate to destroy the meanest or the most harmful of animals. But in practice we ignore the animal world. We grow excited about the protection of the cow. The cow is one of the treasures of India and should be protected. But we imagine that we have done our duty by passing some legislation. This results not in the protection of the cow but in much harm to it as well as to human beings. Cattle are let loose and become wild and become a danger not only to crops but to human beings. They deteriorate and the very purpose for which we value the cow is defeated.

In many other countries, even children take great interest in animals and birds. There are innumerable books on the animal world, and many people take arduous journeys to see some rare bird. Societies of Bird Watchers are formed, not to kill them but to see and study them. How many of our people know even the names of the less common birds? How few books we have about birds and animals.

I welcome this new interest in India in the preservation of wild life. I cannot say that we should preserve that form of wild life which is a danger in our civilised haunts or which destroys our crops. But life would become very dull and colourless if we did not have these magnificent animals and

birds to look at and to play with. We should, therefore, encourage as many sanctuaries as possible for the preservation of what yet remains of our wild life. Our forests are essential for us from many points of view. Let us preserve them. As it is, we have destroyed them far too much. It is true that as population grows, the need for greater food production becomes necessary. But this should be by more intensive cultivation and not by the destruction of the forests which play a vital part in the nation's economy.

In this context I welcome this excellent book by Mr. E. P. Gee, who is one of the best known authorities in India on the subject. Although a citizen of the United Kingdom, he has spent half his lifetime in observing and photographing wild life in India. He has been a member of the Indian Board for Wild Life since its inception in 1952. I had the pleasure of meeting him in 1956 when I visited Kaziranga Wild Life Sanctuary in Assam.

I hope that this book will help in furthering interest in this fascinating subject among our young people. I agree with the author that it is much more exciting and difficult to "shoot" with a camera than with a gun and wish that more and more adventurous young men would give up the gun in favour of the camera. We must try to preserve whatever is left of our forests and the wild life that inhabits them.

New Delhi,
February 20, 1964

Jawaharlal Nehru

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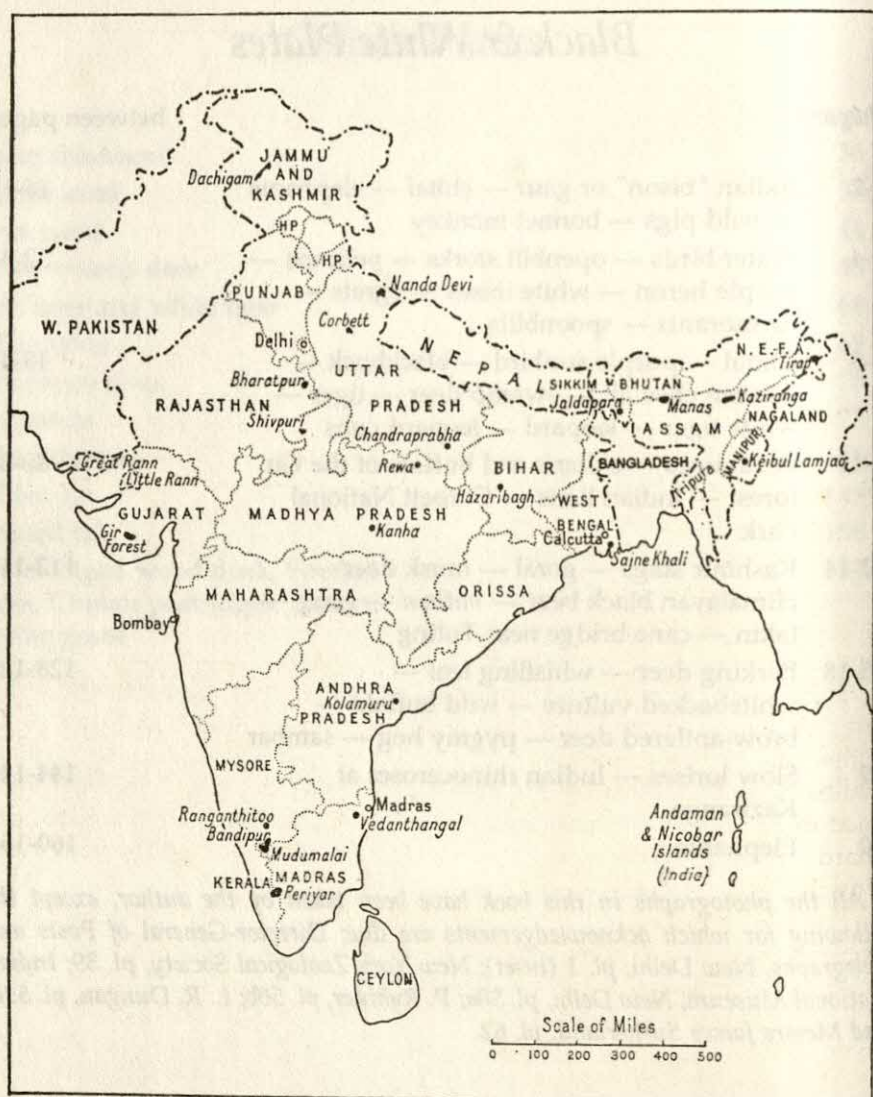
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All the photographs in this book have been taken by the author, except the following for which acknowledgements are due: Director-General of Posts and Telegraphs, New Delhi, pl. 1 (inset); New York Zoological Society, pl. 39; Indian National Museum, New Delhi, pl. 50a; P. Ryhiner, pl. 50b; E. R. Dungan, pl. 59b, and Messrs James Sutherland, pl. 62.



Map of India showing the principal wild life places mentioned in this book.

Introduction

I shall always remember a railway journey in April 1933. It was in a slow, passenger-cum-goods train on the metre-gauge, single track line which runs along the Brahmaputra valley of Assam, then a province of British India.

I was on the initial stage of my first journey home to Britain, after five years of tea planting life. The railway at this point passed through some of the densest and most difficult forests in the world. It was flat and marshy, with small hillocks of about six to ten feet high, and consisted of mixed sub-tropical trees entangled everywhere with creepers of varying kinds. Worst of all, it was cane forest — and this cane grows to the height of the loftiest tree and is covered with deadly curved thorns. Even wild animals find it difficult to penetrate such jungle.

I was alone in my two-berth compartment, and as the train jerked shakily and noisily along the narrow cutting in the forest I had plenty of time to reflect on the past and future. In the late afternoon the shadow of the train, pierced by a long line of windows, also moved along as I gazed sleepily out into the thick tangled mass of dark green beyond.

I reflected with some satisfaction on the fact that, after a somewhat shaky start with brief bouts of malaria, dysentery, Naga sores, water sores and the other usual ailments of someone new to the sub-tropics, acclimatisation had followed and the subsequent years had been full of health and enterprise. I had done what a young tea planter was expected to do: work hard, play hard and do everything hard, though I had usually dodged the hard drinking that was in vogue those days.

Ponies and polo had been taken in their stride, and during the last month I had sold both my ponies and settled all my bills — a feat not performed by many of my fellow planters when setting out on their first home leave. Plenty of tennis and a certain amount of small-game shooting had come my way. But perhaps I had derived most pleasure from roaming about the countryside, meeting villagers, observing their habits and customs, and noting with awe and ignorance the rich variety of fauna and flora everywhere.

I had explored only the fringes of the big jungles, such as the Nambar Reserved Forest through which the train was now slowly moving. I reflected on the stories I had heard and read about this jungle, from which several people had never emerged. If one loses one's way in such a place there is little chance of returning. One can follow a stream, but which way? The stagnant water does not seem to flow in either direction, and in any

case in flat country these muddy streams wind in a series of horse-shoe curves without appearing to lead anywhere.

An experienced sportsman, who later wrote several books on his exploits, once entered this forest to shoot a large wild buffalo which had been reported here. He took with him an expert local Naga *shikari* (tracker), who cut notches on the trees, so that they could find their way back. At a certain point on the return journey they could not find these notches. The *shikari* immediately lost his nerve and panicked. When night came they climbed a tree to escape the leeches, and endured agonies of wetness, cramp and mosquitoes. The following day there was no sun by which they could navigate, only clouds, rain and dense jungle. Another night of agony. The following morning a determined effort in following the meandering bed of a stream only just brought them out.

A small party of British soldiers had ventured into this forest thirty years previously, in pursuit of deer. They never returned, and no trace of them was ever found. Human and animal remains quickly disappear in the rank vegetation of such jungles.

This, then, was the nature of the forest through which I was now travelling in moderate comfort. Or rather one of its natures, for it also had a friendly, inviting aspect. In the mellow sunlight I saw a pair of hornbills flap their wings and glide, flap again and then glide, over the tree tops. Bhimrajs, racket-tailed drongos, could be glimpsed now and then as they soared and dived in pursuit of flying insects. On the ground an occasional barking deer could be seen picking its cautious way through the undergrowth, undisturbed by the noise of the train which had become a frequent and familiar occurrence.

The large blood-red flowers of the Indian silk cotton trees were over long ago, and their leaf buds were now bursting. But the Indian coral trees were a blaze of scarlet, and the *lagerstroemia* or "queen of flowers" was beginning to paint the forest with touches of delicate lilac pink. Wild laburnums in bud showed promise of glittering golden yellow. Many other and smaller flowers of trees and plants, then unknown to me by name, were there in wild and thick profusion: everything competing with its neighbours for a place in the light of day.

Now and then the slow train would become even slower, the open spaces on both sides of the line would widen and a loud grinding of brakes would indicate that a tiny station had been reached. There were no platforms or offices, only a bamboo thatched shed for the railway staff, a few houses of similar material and a small corrugated-iron warehouse for storing outgoing consignments of tea chests, and incoming stores for nearby estates.

After a few minutes' halt the train would shudder and jolt into motion,

and again the forest would come into view. In the setting sun the train's shadow was now farther away, and the forest appeared darker and denser — the time for nocturnal creatures to start out on their nightly prowl.

As I threw a last lingering look at the forest, before darkness set in, I almost regretted leaving it behind. The high hopes and excitement of going on my first home furlough became tempered by the feeling that I was leaving behind something which offered unique opportunities for adventure and explorations in natural history — challenges to an inquiring mind.

*

Six months later, after the spell of relaxation and enjoyment which can only be experienced when one is young and on one's first return home from a foreign clime, I made the same railway journey back to the tea estate.

And as I looked at the familiar creeper-entwined jungle, now with the curious mixture of rich autumn colouring and springlike pale greens of those trees whose budding leaves herald the cold weather in India, I knew that I had done the right thing in returning. Without any doubt, this was the part of the world I wanted to be in, where there was so much to do that had not been done before.

And so I continued with my tea-planting life, my mind made up that this was the right kind of outdoor life for one born and brought up in the countryside of the north of England. After four years in the Indian Army, during the second world war, I returned as a manager of another tea estate of Assam.

There was little spare time in which I could go off on my own into the forests and to do the things I wanted to. But living and working on the fringes of the big forests and grasslands gave me ample opportunities of getting to know and understand the Indian countryside and its wild life. Many were the times that I had brought to me the young of tigers, leopards, bears, cats, civets, pangolins and other such animals, and fledglings of birds, which I reared and released when old enough to fend for themselves.

Later in my tea-planting career, when the horse had given way to the motor vehicle and after the system of annual "local leave" inside India was given in addition to home leave, I found time to go farther afield and to explore the faraway parts of India. I was now able to see for myself the richness and variety of the country's wild life resources, and how they extend from the wettest region of the world in the extreme north-east to the driest in the north-west, and from the highest in the Himalayas down to sea level.

This book is an effort to arouse interest in the task which confronts us all

in India, preventing the remaining wild animals and birds from disappearing. Though it covers the whole of the subcontinent it is not entirely comprehensive; but it tries to include all the more important wild life reserves region by region, and all the endangered species as well as the more interesting ones.

It also endeavours to include those people who have contributed most to the noble but often frustrating attempt to try and save India's magnificent wild life heritage from irreparable destruction.

The "Bison" of Bandipur

In the spring of 1950 I found myself on my way to south India for the first time, with the intention of meeting several people well known for their interest in sport and conservation, of seeing some wild life sanctuaries down there and of eventually catching a boat at Colombo for home.

I broke my journey in order to call on Colonel R. W. Burton, with whom I had several times corresponded about wild life preservation. Formerly well known as a big game hunter, he was then over eighty, a small, frail but erect and commanding person, who had spent most of his retirement in India, championing the cause of India's ever-dwindling wild life.

During his adventurous career one leg had become shortened and one eye had the lower lid hanging down with a scar just below it. As soon as we began talking I asked him about the misadventure which had left this mark.

He grinned. "I once followed up a wounded bear, crawling on my knees into its cave. It seized my head in its jaws." He seemed to be reflecting on the recklessness of youth, and of things that had happened long ago.

"Did you have your rifle with you?" I asked.

"Yes, my rifle was pointing at the bear's chest. Had I pulled the trigger the bear's jaws would have clamped hard shut and finished me off." A pause.

"Then what happened?" I asked.

"I still did not fire. I yelled loudly, and the bear let go. I then retreated quickly to safety," he thus concluded, and the conversation turned to wild life preservation.

For many years Burton had been writing letters and articles strongly advocating the preservation of wild life, trying to stir up the apathy of officialdom. He had recently written a pamphlet on the subject and published it at his own expense. His room, filled with books, manuscripts and papers, testified to his hard work and indefatigability in his self-imposed

and thankless task. No *shikar* trophies or pictures of killed animals adorned his walls.

Perhaps this strong advocacy for the preservation of wild life was due in some measure to repentance or regret at his own hunting of big game in his younger days. In any case, his sincerity, his missionary zeal and his tireless energy in his latter years earned him the undying respect and gratitude of a great many people interested in the survival of the country's wild life.

The last thing he said to me on that visit was: "You are a much younger man than I expected. You have many more years ahead of you. Carry on the good work of wild life preservation."

I continued my journey to Mysore city and on to a coffee estate in the hills which divide Mysore from Madras. A car met me at the railhead, and quite a long road journey took me through some of the most beautiful country that I have seen in India — grassy hills of 5000 feet and more in height, with *sholas* or strips of thick evergreen forest in the folds between the hills, and on northern slopes.

Soon I reached my destination — the home of R. C. Morris, perhaps the best known and most knowledgeable of the sportsmen-naturalists of south India.

His beautiful house was adorned with numerous well-mounted heads and skins of big game. But he had not, I believe, been such a killer as these trophies would suggest: he was also a very keen naturalist and observer of wild animals and their ways. In his latter years he shot only the few-and-far-between destructive tigers, some rogue elephants, a few old or diseased "bison" and the like. He was commendably strict about the observance of close seasons, did not shoot immature males or females, and deplored the indiscriminate slaughter that was going on in so many places.

"Do you want a 'bison'?" he asked, being hospitable.

"Yes," I replied. "But not to shoot. Only to photograph." He looked visibly relieved. So many people had come to his place wanting to shoot a tiger or a "bison".

The next four days were taken up with both of us going out daily to try and photograph what in south India are always referred to by sportsmen as "bison", in other words the gaur (Pl. 1-3).

I remember being highly amused at the way Morris was loaded up like a Christmas tree, with binoculars, binocular case, still camera, ciné camera, tele lens, exposure meter, rifle (just in case . . .) dangling in every direction; especially when I reflected that I myself was the pot calling the kettle black, for I was similarly covered with impedimenta — the only difference being that I carried a tripod instead of a rifle.

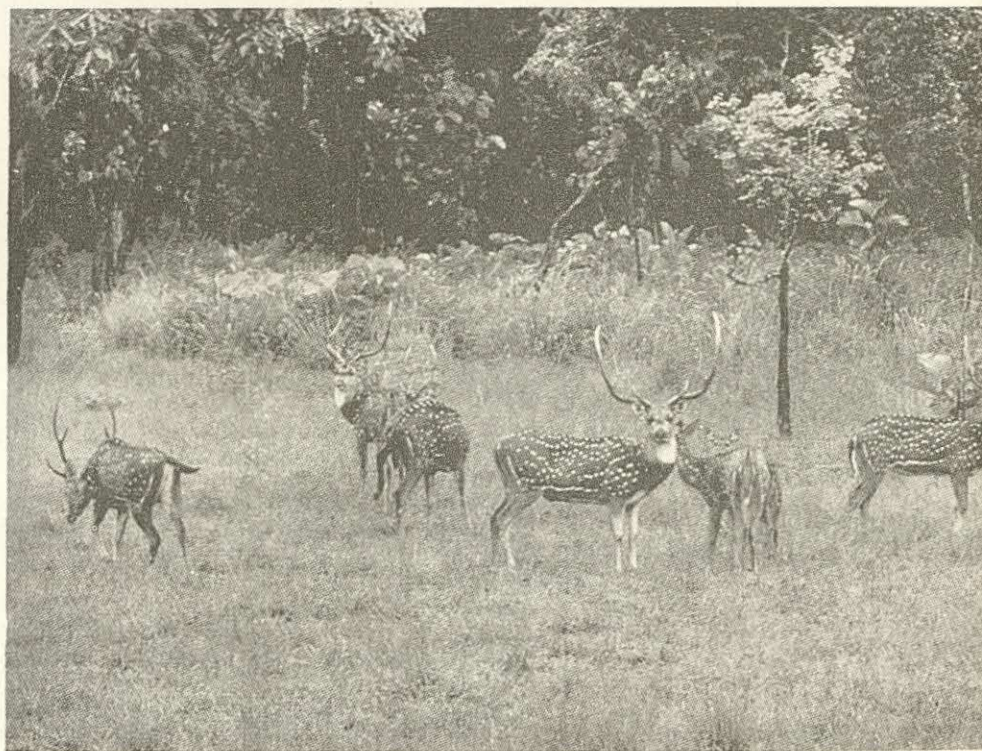
Morris and I saw 109 gaur or "bison" during the four days I spent



1. Bull gaur (Indian 'bison') in the early morning



- 2a. "The sentinel bull came grazing nearer and nearer to me"
b. "The whole herd then rose and moved off to the forest beyond"

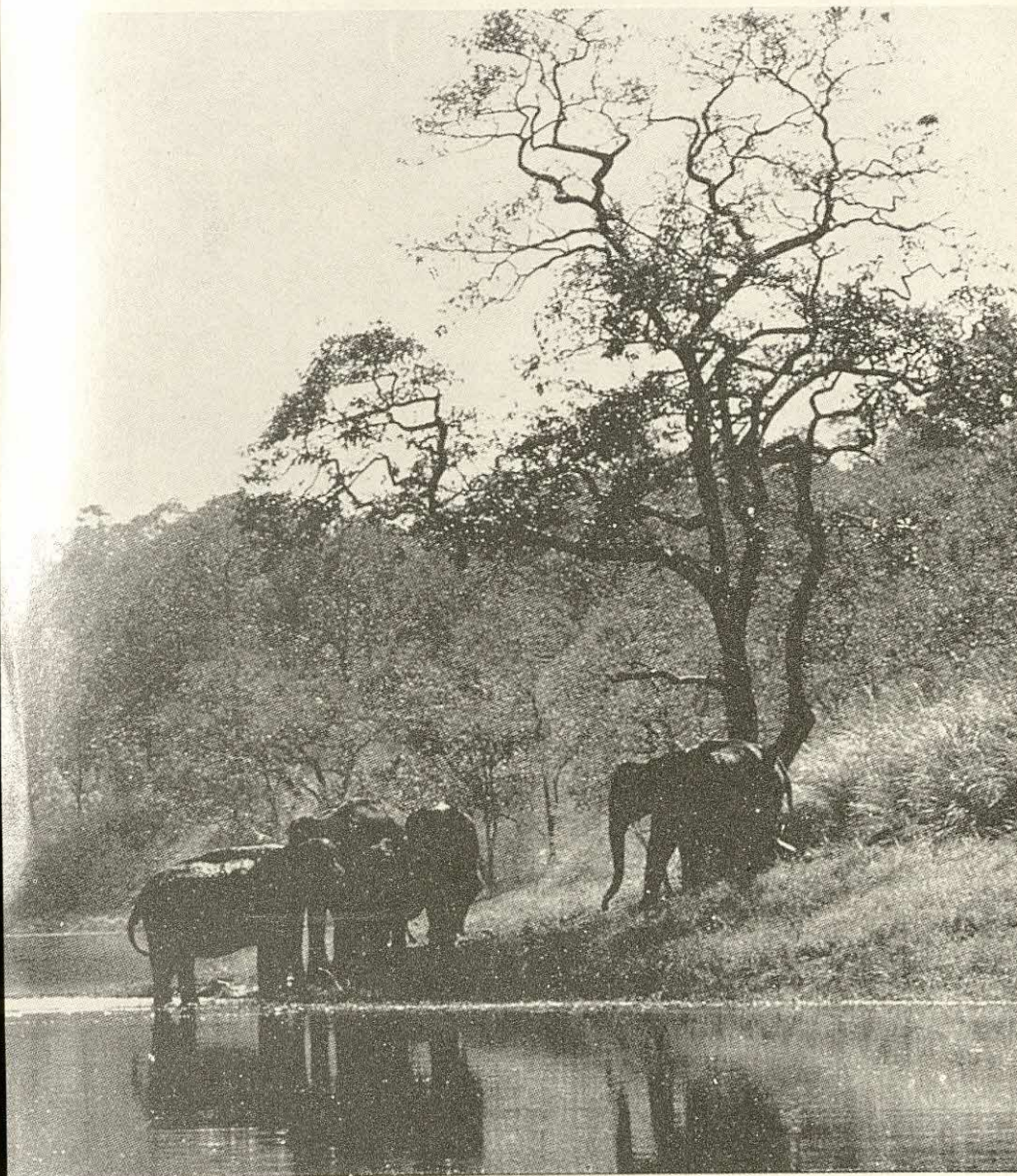


- 3a. "The bull gaur looked up, grass in its mouth."
From this photograph a postage stamp was made
- b. Few, if any, deer are more beautiful than the
chital or spotted deer



4a. Chital fawn in the forest

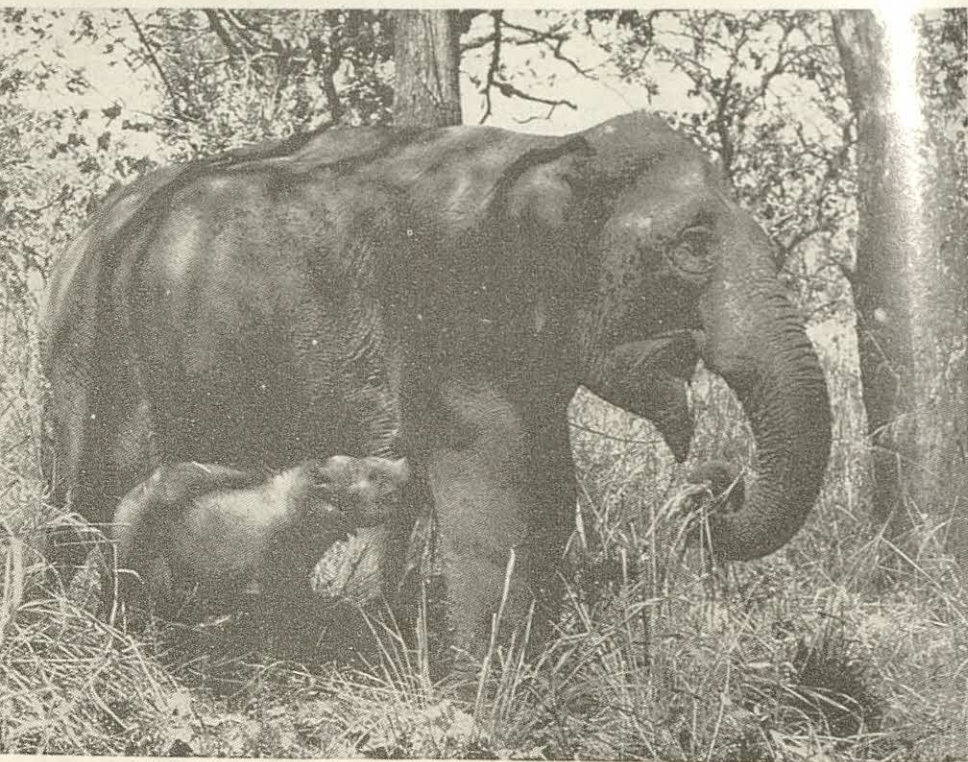
b. "Wet from their swim they looked like huge carvings of ebony"



5. A small herd of elephants is reflected in the still water of Periyar lake

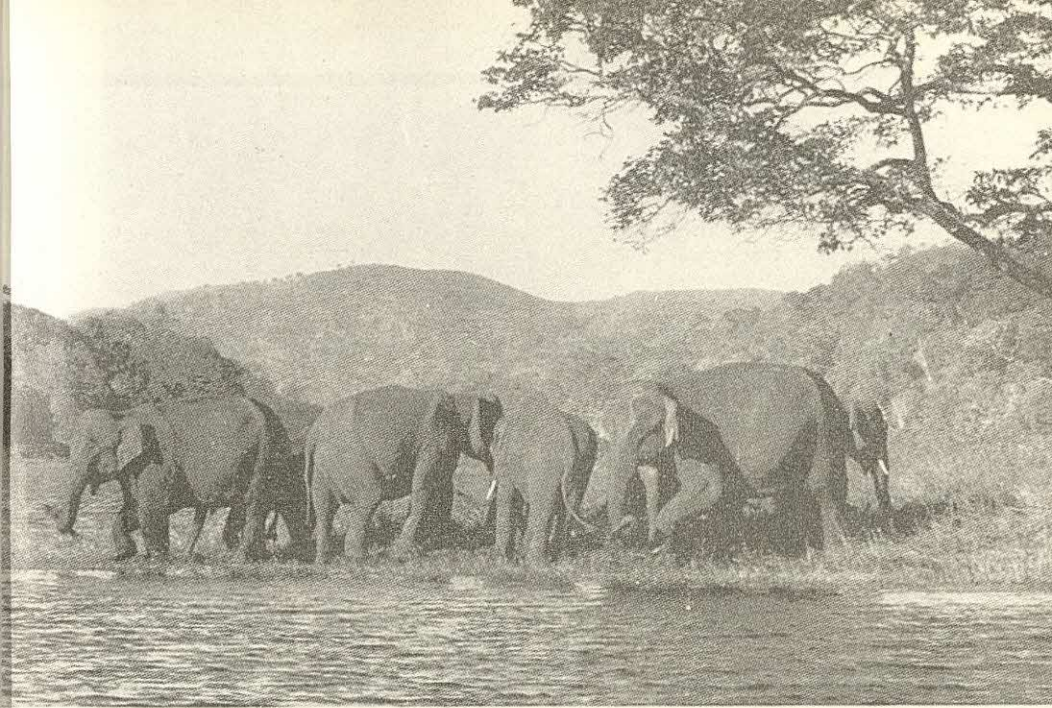
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6a. "The wild tusker came towards us, head cocked on one side"

b. A mother suckling her young calf in the forest



7a. "The animal on the left is right-footed, while the one on the right is left-footed"

b. Vultures on a wild elephant which had died a natural death



8a. A sounder of wild pigs in Periyar Sanctuary
b. Bonnet monkey, mother and baby

there¹, and I could easily have shot ten sizeable bulls. But I did not succeed in securing a single photo of them — which goes to show that a camera is a more difficult weapon to use than a rifle.

*

Probably the best sanctuary in India for seeing and photographing gaur under the most pleasant conditions is quite close, at BANDIPUR. Although I have obtained good pictures of gaur in other parts of India, I have made the most consistently successful shots, both still and ciné, in this delightful spot.

Bandipur Sanctuary is 3,300 feet up on the Mysore plateau, and is comparatively dry and rocky. The forest is sparse, and contains stunted teak with other trees, including the famous sandalwood. These stunted trees make the place most photogenic and colourful. Like several other wild life sanctuaries in India, this place owes its origin and existence to a prince, the Maharaja of Mysore in this case, for it used to be his own private game preserve. Now under the jurisdiction of the Forest Department of Mysore it is well developed and has no less than eighty miles of motoring roads inside its twenty-two square miles. It is hoped to extend the sanctuary considerably, and fortunately there is plenty of forest land nearby for this purpose.

The Maharaja himself is all that one could possibly expect to find in the proverbial maharaja of India — with a magnificent palace (when it is illuminated on certain nights by 60,000 golden electric bulbs it has to be seen to be believed), ceremonial elephants, state troops and tiger shoots. He is an experienced sportsman and wild life photographer and a good naturalist.

He is an extremely cultured, musical and well-read man, and a philosopher of international repute. With all these qualifications he was nominated by the Government of India as the Chairman of the Indian Board for Wild Life.

So well-read is he that he referred in conversations with me to articles which I had written some time previously on gaur and other subjects in *The Field* — articles which I had almost forgotten. We had several discussions about wild life when the tasks of high office permitted.

The word "gaur", as far as I can ascertain, is correctly pronounced to rhyme with "sour" (opposite of sweet) and not with "door".

But you cannot expect a person in central or south India to stop using the

¹ We also saw a sambar — the large, dark-coloured, forest-inhabiting deer of India (Pl. 48) — two four-horned antelopes (the only four-horned animal in the world and peculiar to India) and some grey jungle-fowl. What lovely country!



word "bison" for gaur, any more than could you ever persuade an average American to give up saying "buffalo" when he means bison, or "elk" when he means North American wapiti!

The gaur, of course, is not a bison at all. It is a wild ox, the largest of all the bovines — sometimes as big as six feet four inches at the shoulder, and weighing as much as 2000 lbs. It is a genuinely wild species of ox, and in this respect it differs from the "wild" park cattle of Britain (such as the Chillingham wild cattle), which are now generally regarded as semi-feral descendants of old domestic breeds¹.

The gaur is found in the hilly, forested areas of most parts of south India, and in some parts of central, northern and eastern India, but not in the north-west. There are still a few in Nepal. In north-east India it is known as the *mithun*. It occurs also in Burma, and in Malaya where it is called the *seladang*. It is reported to have become extinct in Ceylon about 300 years ago.

The gaur is larger and more magnificent than the true bisons of North America and Europe, which are shaggy and short-horned. How then did it become to be called "bison" in south India by sportsmen? The following story may provide a possible answer. In the very early days of the British in India, a sportsman was out shooting with a local *shikari* or tracker. In the distance they saw a gaur.

"What is that animal?" asked the sportsman in a whisper.

"*Bhainsa!*" returned the *shikari*, who mistakenly thought the animal was a buffalo.

"Bison?" asked the sportsman, thinking the *shikari* had said this word.

"Yes," replied the *shikari* politely.

It is said that this sportsman shot the animal and described it to his friends as a bison. So when the word "bison" is used for gaur, the inverted commas are most important!

The local villagers, known as Kurubas, are a feature of Bandipur. These men are expert trackers. They do not follow pugmarks — the ground is usually too hard for these. They have an uncanny way of knowing just what is happening in the forest: the absence or presence of thin gossamer cobwebs, dew on the undergrowth or otherwise, bent blades of grass, the distant calls of animals and birds, and they know what animals have passed, when and whither.

They make a speciality of asking the visitor what he wants to see, and then providing it. I wanted photographs of gaur, and they soon led me to a herd of thirty-four of these magnificent animals. I remained near this herd for about two hours. Sitting on elephant-back and remaining quiet I was

1 I have come across "wild cattle" in India, but these appeared to be feral i.e. domestic cattle which had been abandoned and were living on their own in the forest.

able to watch them as they moved slowly through the undergrowth, grazing as they went. The herd bull, in magnificent condition and glossy black in colour, mixed with the cows; while other lesser bulls respectfully kept their distance. The cows were ever vigilant for the welfare of their calves. Though the grass was still high I secured some reasonably good pictures.

Riding elephants are available for those who wish to enter the forest, away from the motoring roads. Once when I was there, the Range Officer and I encountered a wild tusker elephant while we were out on elephant-back. The wild tusker came towards us, head cocked on one side as is the habit of these creatures, for they cannot see easily if they look straight ahead due to the frontal bump on their trunk and forehead (Pl. 6a).

The Range Officer, an experienced man, hastily loaded his gun, in case the wild elephant charged. But I knew that our riding elephant was a cow and that it was unlikely that there would be trouble. Also I knew that a shot fired in the air would probably be sufficient to scare off the wild one, if it did decide to come too close.

So I was very busy all the time with my cameras, and never thought of anything else. Result: at least one nice picture.

In this neighbourhood are a number of bonnet monkeys, and I have always seen them on the road from Mysore to Bandipur (Pl. 8). The last time I was there I met an American research graduate who had lived with these monkeys for seven months, studying their social life. He had himself grown whiskers all round his face, the centre of which was clean-shaven, to look like one of these creatures, and thus be accepted by them! He knew all fifty-eight of the troupe by name, except some of the young ones which looked alike.

He told me how he made submissive gestures to them so as not to frighten them, and how he had studied their "peck order" (in this case "bite order"), and how the head male monkey broke one of its canine teeth. It kept its mouth shut for some days and the others did not know about it. Then the secret leaked out, and several other male monkeys immediately set on him and downgraded him to a much lower position!

When the Maharaja of Mysore and the Chief Conservator of Forests told me that when I went to Bandipur on my first visit I would see a herd of about 500 chital near the Rest House, I must have looked incredulous for they repeated their assertion.

Sure enough, on arrival at Bandipur, innumerable chital or spotted deer (Pl. 3-4) were actually waiting for me on the main road. As I drove up in the truck they gracefully parted to each side of the road to let me pass.

Where are these chital now? On subsequent visits to this place I have seen fewer and fewer of these beautiful creatures. The main road from Mysore to Ootacamund runs through Bandipur and Mudumalai, the adjoining sanctuary on the Madras side, and I have from time to time heard disquieting rumours of shooting at night from motor vehicles from these two towns. I wonder if these rumours were true?

*

Adjoining the Bandipur Sanctuary of Mysore is the MUDUMALAI Sanctuary of Madras, and both form a continuous stretch of forest with only the inter-State boundary dividing them. Mudumalai is lower in elevation, receives more rainfall and is more thickly forested.

The wild animals do not recognise this inter-State boundary, and roam freely from one place to another depending on the season of the year, availability of good grass for grazing and water.

On the first visit of mine to Mudumalai I did not see any gaur. These had all gone to Bandipur side, I was told. But I saw wild elephants, chital, Malabar squirrels, common langurs, wild dogs and other fauna, including grey jungle-fowl.

It was during this visit that I saw wild dogs, those merciless scourges of wild herbivorous animals, in action against chital. They are most cruel in their methods. I watched two or three of them chasing a chital round and round, and just as both pursuers and pursued were beginning to feel tired, these wild dogs would drop out and another two or three would take up the chase. So the chital hardly have a chance.

It is usually recommended that the numbers of these terrible predators, who will even tree a leopard and who were the chief competitors in this part of the country of the cheetah, be kept down to a minimum — especially if deer are becoming scarce. Wild dogs do, however, play a useful part in the general set-up of nature: they keep the deer on the move, and so favourite grazing areas do not become over-grazed and therefore impoverished. Otherwise there is very little to be said in favour of these animals.

They are a reddish colour, with darker tails, black at the tip, and very much resemble the village dogs — to which they are only distantly related. They never attack human beings, and are said never to pursue domestic animals. They cannot be kept and tamed.

I have visited Mudumalai several times since then, usually staying at the Rest House at Kargudi, which means "cloud village". Nowadays there is a new hotel or tourist lodge there, with everything laid on for visitors.

Riding elephants take visitors out into the fairly thick forest, and gaur can usually be seen. The months of March and April are best for this, but the sanctuary is open all the year round. I saw a lot of gaur there in February 1961, but photography was made somewhat difficult because of the large amount of thorny *lantana* thickets¹.

*

Before leaving Madras State I must mention GUINDY PARK, a surprising bit of natural semi-wild country on the outskirts of Madras city, near *Raj Bhavan* (Government House). It contains a fair number of blackbuck and chital, and so is an asset to the State. May it for ever escape the attentions of municipal planning authorities; it and its wild life deserve careful preservation as a "lung" or "green belt" of an expanding city.

Whenever I think of Mudumalai Sanctuary and Guindy Park I think of M. Krishnan, one of the best naturalists of present-day India. He is middle-aged, active and does a lot of writing on natural history for newspapers and magazines. He is an artist also, and an expert wild life photographer. "Every hair" must be his motto, for his pictures show the finest detail of the coats of gaur, sambar, chital and the like, and every wrinkle on the skin of a wild elephant.

The camera I once saw him using in Guindy Park, Madras, was a large, composite affair, with the body of one make and the tele lens of another, and other parts and accessories all ingeniously mounted together by himself. I cannot swear that I saw the proverbial bootlace used to fix them all together, but I am sure there must have been some wire and hoop iron somewhere!

His results, even when greatly enlarged, are very good. His activities, I think, are restricted to south India. He is a bit of a "lone wolf" and does not care for meetings or advisory boards, but as a naturalist he has no equal as far as the wild life and sanctuaries of that part of India are concerned.

¹ I must mention an important and rare wild goat found in some of the more rocky mountains nearby — the Nilgiri tahr or "ibex". I have never yet had an opportunity of visiting these interesting creatures, which the Nilgiri Game Association has taken such an interest in preserving. They are also found farther south, in the High Range of Kerala. They deserve very careful protection, and even sanctuaries, in case they soon become extinct.

The Elephants of Periyar

PERIYAR LAKE, in what is now Kerala State, is artificial. It covers ten square miles, is about 3000 feet above sea level and was made in the year 1900 to provide water for irrigation in Madras; the water flows through a tunnel in the hills into the irrigation areas.

The hills rise up to about 6000 feet, and are beautifully reminiscent of those of the English Lake District. They provide really wonderful, peaceful and unspoilt scenery — with the added attraction of wild life. Motor boats take you round the delightful creeks, promontories and islands, where you can see wild elephants, gaur and sambar for certain, and possibly barking deer, pig and wild dog. Once or twice a tiger has been seen from the lake.

As is usually the case, my first visit in 1950 was the most memorable, though easily the most uncomfortable! I remember I was delayed a whole day en route awaiting transport. Then late in the evening I was dropped at a Forest Rest House near the lake. Though I had given three months' notice of my visit, the place was empty and unprepared! The *chowkidar* (watchman) returned later, but he could only speak Malayalam and Tamil, and I had the greatest difficulty in making him realise what I wanted.

After indicating to him that I wanted potatoes, milk, sugar, tea and such commodities, the egg question was insuperable — until I went through the motions and noises of a hen laying an egg! The response was gratifying.

But the wonderful scenery and the wild life made all discomforts well worthwhile.

Visitors now have no troubles: very soon after my visit the State Government built a fine hotel near the lake; and now the transport facilities, catering, service, motor launches and other conveniences make Periyar the best developed and most attractive wild life sanctuary in India.

The only "snag" about Periyar is the existence of snags, literally! When the lake was formed, they did not remove the trees of the area which was due to be inundated. These have become so hardened by the water that they are like rock, and removal would now be a very costly business.

However, one soon gets used to these, and the scenery is not spoilt by them.

Before dealing with wild elephants, there is more to tell about gaur, which can be seen grazing on the hillsides and sometimes down near the water's edge.

A retired game ranger, who was re-employed by the Peermade Game Association (now appropriately re-named the Peermade Wild Life Preservation Society) to watch their wild life interests, accompanied me. A. W. Wood was an elderly Anglo-Indian with a lot of experience of wild animals, and a lot of energy. After sighting a herd of gaur we left the boat and went on foot, through some thick forest, silently. For gaur are very wary creatures, and there is usually a sentinel bull watching for danger.

At that time I had no tele lens for my camera. This meant that I had to approach very close to get any decent picture at all. Also the gaur had to be stalked up-wind, I had to keep out of sight, I had to have a ready line of retreat in case of trouble and I had to bear in mind the foreground, middle distance and distance scenic requirements for a pleasing photograph. So many things to think of — as well as shutter speed, lens aperture, focusing, and so on.

Wood stayed still, and I crept forward. Soon a large bull gaur appeared in front of me, looking in every direction and every now and then putting its head down to graze. Each time it put its head down, I crept forward. Whenever it looked up, I froze.

As I got closer, I saw that just beyond this lookout bull was the whole herd.

They had not seen me yet, and I got an eavesdropper's glimpse of their private family life. There was a large jet-black bull — probably the master bull of the herd. Two smaller and lighter-coloured bulls were sparring in a friendly trial of strength — "peck order" again. Another was flirting with a lady friend. The rest of the dark brown cows and fawn-coloured calves were lying down.

The sentinel bull came grazing nearer and nearer to me (Pl. 2). It came so close that I thought it was now time to take my picture and thus show myself.

It heard the click of the camera and swung round, glaring at me. I froze where I stood. Then it gave a melodious bellow of alarm and hurriedly joined the herd. The whole herd then rose and moved off to the forest beyond the grassy glade. But they had the kindness and grace to turn round and give me a last look — and the chance of another photograph.

For a minute they stood, dorsal-ridged and neatly white-stockinged, their light-coloured muzzies and gracefully-curved horns showing up nicely

against the background.

Shortly after they had all disappeared into the forest, a golden-coloured, newly-born calf stood on its feet and staggered after them, plaintively answering the cries of its mother.

An hour later the herd could be seen climbing slowly over the crest of the hill, as we continued our cruise on the lake.

Another day we again disembarked and climbed a hillside to photograph a solitary bull gaur. As Wood and I climbed the hill, the whole panorama of the sanctuary gradually changed and became spread out below us, revealing an unspoilt tract of beautiful wooded hills and valleys. The creeks of the lake had become visible, looking like the long tentacles of an octopus stretching in all directions.

Solitary bull gaur are sometimes met with, as in the case of wild bull elephants. Occasionally they can be bad tempered and even dangerous. It used to be thought that these lone bulls had been ousted from the herd, after a fight, and were forced to lead a solitary life. But it is now generally believed that adult bulls often leave the herd of their own accord, preferring a peaceful existence to the social life of the herd. If the animal happened to be a master bull of a herd, it would return when it wanted to; other bulls could also return, if willing to submit to the leadership of the master bull.

I remember having great fun with this solitary gaur in 1950, on the hillside. Wood stayed still, behind a tree, while I walked forward with my ordinary folding camera. Whenever the bull looked up, I simply froze in my tracks. Not a movement on my part, until the bull put its head down to graze. Then I went forward again, with my eyes all the time on the nearest tree, in case.

This bull, a huge jet-black fellow, behaved well. When at last I got rather close, it tossed its head, turned and made off to the nearest cover.

It was during this hillside trek that I caught glimpses of black Nilgiri langurs — beautiful but wary creatures. Because of their lovely fur, and the supposedly medicinal value of their flesh, blood and organs, they have been much persecuted.

I have visited Periyar several times since then. The most successful of these visits was in 1961 when I got a nice photograph of a bull gaur, with a more up-to-date camera and tele-photo lens. I think it must have been the master bull of the herd, which was just inside the forest.

When we first saw it grazing at the edge of the lake, we did the usual thing: the driver of the small diesel launch steered straight towards the animal at half speed, and when about 200 yards away he shut off the engine.

The launch drifted silently towards the gaur, as it grazed. It looked up,

grass in its mouth. I photographed it just before it entered the forest to join the rest of the herd (Pl. 3).

From this photograph the Posts and Telegraphs Department of the Government of India later made the postage stamp which formed one of the wild life series of six.

During this visit I saw several sounders of wild pigs (Pl. 8). These creatures, found all over India, have become very wary and are difficult to photograph because of widespread persecution. They are generally classed by States as vermin because of their habit of raiding food crops, and can be shot by anyone at any time. In addition they are much relished as a meal by tigers and leopards, and by lions in the Gir Forest, though a large boar can be more than a match for a tiger or lion.

These are the same animals that are the quarry in the well-known sport of pig-sticking, which still takes place in north India where there is flat, grassy terrain suitable for horses to gallop over.

Periyar is the veritable home of wild elephants (Pl. 4-7). On every visit I have seen many of these huge creatures, usually down near the water. Solitary bulls can often be seen.

On my last visit I saw a large solitary tusker, so I ordered the launch to be steered straight towards it, at half speed. Then with engines silent the launch glided quietly up to it. The tusker was in full *musth* and I could clearly see the black discharge from the glands between the eyes and ears.

I should now say something about *musth*. *Musth* is a condition in elephants which has never been fully studied and explained.

Tame bull elephants usually come into *musth* regularly each year and remain in this condition for about three weeks, during which time they are often dangerous and will try to kill even their own *mahouts*. They have to be chained up during this time and fed very carefully. Sometimes, however, when a working elephant is about to come into *musth* it is given extra tasks and the *musth* will pass off quietly.

Because bull elephants come into *musth* and can be dangerous nearly all elephants found in zoos and circuses are cows, though these too have *musth* glands and very occasionally come into *musth*. A cow however is never temperamentally upset in this condition. I have heard of several cases of tame cow elephants emitting the black discharge of *musth*, and M. Krishnan mentions instances of this occurring among wild cows.

Musth is sometimes described as an instinctive desire in the male elephant to fight, and even kill, before mating. But there have been cases when a bull in *musth* was not interested in a cow, which was sired instead by a bull not in *musth*. Also I believe that a bull in *musth* sometimes remains in this condition after mating. On three occasions I have encountered a wild

bull elephant in full *musth*, twice in Kaziranga and once in Periyar, but each time the animal has been harmless and not at all aggressive. M. Krishnan has also found wild bull elephants in *musth* to be harmless (although he mentions only tuskers, thus implying that tuskless males do not suffer from this condition; but one of the wild bulls in *musth* which I encountered in Kaziranga was tuskless). Can it be that only tame bulls are dangerous when in *musth*, wild bulls being unaffected?

Not all Indian bull elephants have tusks. Many are tuskless and are known as *makhnas*. As far as I can find out, the ratio of tuskers to *makhnas* is about fifty-fifty in north-east India, but the proportion of tuskers in south India is much smaller, and smaller still in Ceylon. So far as I know there is no explanation of why some bulls are tuskless. It does not seem to be hereditary.

R. C. Morris told me an interesting thing about *makhnas* in south India, that they are invariably quiet and docile and never become rogues. But in north-east India a *makhna* can become as dangerous a rogue as a tusker. Certainly the lack of tusks does not seem to be a handicap, because I have several times seen a *makhna* as the master bull of a herd of wild elephants in north-east India, in preference to a tusker. This is because nature has compensated *makhnas* with greater size and strength of neck, head and trunk to make up for the lack of tusks. In a fight a *makhna* can break off one of its adversary's tusks with its trunk. This is why one often comes across a bull, known as a *ganesha*, with only one tusk.

Indian cow elephants, unlike their African counterparts, never have tusks. (Other well-known differences between Indian and African elephants are that Indian elephants are about one foot smaller in height, have smaller ears, convex not concave backs, and are generally regarded as more intelligent than their African cousins.)

The master bull of a herd is generally master only in the sense that he dominates the other bulls. The leader of the herd is usually an old and experienced cow, as most observers will agree. Not infrequently the master bull leaves the herd altogether and wanders off by itself to return as and when it pleases. I have often noticed in elephant catching in north-east India that when a herd of wild elephants is captured, the master bull usually escapes being caught in the stockade because it stays at the side or rear of the herd. This suits the elephant catchers, because if a large bull is caught in a stockade it can cause a lot of trouble and even do damage.

During my last visit to Periyar I saw a herd of elephants swimming from the mainland across to an island. I was able to watch them at very close range as they emerged from the lake and entered the island. As usual their leader was an old and experienced cow. Wet from their swim and with the morning sun behind them, they looked like huge carvings of ebony (Pl. 4).

In the afternoon I passed along the other side of the same island. There was the same herd of elephants, but their colour had changed from black to dark pink!

As I had drunk nothing stronger than an orange squash, some other explanation had to account for their change in colour. Now elephants in south India, and especially in Ceylon, become pinkish (with dark grey spots) on the trunk, head, ears and some parts of the body. This "depigmentation" increases with age.

But even this did not explain the change in colour in this herd. The real explanation lay in the fact that the soil of this island is reddish in hue, and these elephants had been picking up the dust with their trunks and throwing it over their bodies — their idea of keeping cool.

My photograph of this herd, taken in the afternoon, shows them pulling up the grass at the shore of the lake, knocking the tufts against a raised forefoot to shake the mud off and then eating them. It is interesting to note that the animal on the left is right-footed, while the one on the right is left-footed (Pl. 7). So this idiosyncrasy is found in elephants as well as in human beings. Tame elephants, while working, are also either right-handed or left-handed.

Wild elephants in India are very prolific. Some day, perhaps, their numbers in Periyar may have to be reduced to prevent over-grazing and impoverishment of the soil, as has to be done to the hippo of the Queen Elizabeth National Park in Uganda.

Wild elephants in Uttar Pradesh, Bihar and Orissa are on the increase, and the authorities there are worried because the art of catching and training them in those States has died out. Elephant catching operations are still conducted regularly in Bengal and Assam in order to keep the numbers of wild elephants under control, for they can do great damage to crops and so on. Mysore and Madras also still keep up their catching operations.

Some people may ask what the population is of wild elephants in India. I think that no census has ever been done, but occasionally estimates are made by Forest Officers in the States in which they occur. I should think that there are very roughly about 3000 in south India — of which there must be fully 500 in Periyar. This would mean a total of about 7000 in the whole of India. A few exist in Nepal and East Pakistan.

It may be considered rather rash to offer estimates of numbers when no census has been done. But I feel certain that an estimate, based on the available information and on personal experience, is better than no estimate at all. And should anyone be provoked into offering alternative estimates, with reasons for so doing, then a worthy objective will have been achieved — more information on the subject and more conservation-mindedness all round! And, who knows? — Government Departments concerned may

sooner or later be induced to have proper censuses made!

I have never been able to understand why the wild elephant population of Ceylon, now said to be 1,650, is declining so rapidly that conservationists there are alarmed about the chances of this animal's survival. I have no information about elephant populations elsewhere, except that the strength of the trained elephant force working on teak in Burma has decreased from 6,000 in 1938, to 1,500 at the present time.

There are many myths connected with elephants, and so many writers of books on elephants have made good use of these to make their stories attractive to the average reader. It is only fair that I should expose some of these fanciful beliefs.

For instance elephants in the wild state have never been seen dancing, much as I admire Kipling's books!

Elephants need not be, and are not, in the least afraid of mice. If a mouse entered an elephant's trunk it would easily be blown out!

Elephants do not live to an extreme old age. There is no scientific proof of any elephant ever having lived to more than seventy!

The elephant's memory has been grossly exaggerated, and is probably not much better than that of a dog or a horse.

Intelligence in elephants has also been the subject of much exaggeration, and is probably less than that of a chimpanzee and orang-utan, and about equal to that of a dog and horse. Elephants are very easily scared and are really remarkable for their docility and amazing ability to learn from and work for man.

Elephants die natural deaths like any other living creature, and dead ones have often been found. There are no "elephant graveyards" with masses of ivory to be found! Wild elephants generally seek seclusion near water at time of death, and scavengers and tropical vegetation quickly remove all traces of carcasses.

I once saw the carcass of a dead wild elephant near the River Manas in Assam. The next flood would have removed the bones to the Brahmaputra or even to the Bay of Bengal.

During my last visit to Periyar I saw some vultures in the trees at the far end of a winding creek. I took the launch right along the creek, and there, round the last bend, was a wild elephant which had died a natural death — for there were no traces of human activity there. It was half submerged in the lake (Pl. 7).

Vultures were busy up above removing traces of the carcass, and multitudes of little fish were doing the same down in the water.

So had ended the life of a noble animal, the mightiest and most lordly creature of the jungle.

The Pelicans of Andhra

In the State of Madras a new sanctuary has been made at POINT CALIMERE, on the sea coast. In fact I think it is proposed to develop this place into a national park. I have never been there, but I hear it is a good place for seeing flamingoes feeding during the non-breeding season. Other bird life is in evidence there, and I believe there are a few blackbuck to be seen.

But the bird sanctuary *par excellence* in south India is VEDANTHANGAL (Pl. 9), fifty-four miles south of Madras city. The Madras Forest Department has managed to get the branch track, leading up from the main road to the sanctuary, made into a first-class motoring road.

This sanctuary consists of a small artificial lake, of about seventy-four acres in extent, the water of which is impounded by an earthen *bund* or dam and is released for irrigating the rice and other cultivated fields below it. Dotted on the lake, growing in the water, are trees of the species *Barringtonia acutangula*.

It is in these trees that countless water birds breed in the winter months of October to March — provided that there is sufficient water after a normal monsoon.

There are two requirements in India for the breeding of water birds: firstly, there must be water and a copious supply of fish and other aquatic food for so many water birds to raise their hungry families, and secondly, there must be suitable trees insulated by water to prevent predators such as cats and mongooses (as well as human beings!) from destroying the eggs and chicks.

Both of these conditions are satisfied at Vedanthangal, when the monsoon has been normally good and water plentiful. In Tamil the word "Vedanthangal" means "a bird shelter".

R. S. P. Bates, formerly one of India's leading bird-photographers, "rediscovered" Vedanthangal in November 1926, but found that there was no water then due to the failure of the monsoon, and therefore no birds. In 1928 and 1929, however, he found plenty of water and masses of birds.

One of the most interesting things about Vedanthangal is that it has been a sanctuary for birds since time immemorial. For there is a village near by and the inhabitants have long recognised the value of the birds' excreta (*guano*) as a wonderful fertiliser when the fields are irrigated.

No one is allowed to interfere with the birds, or to molest them in any way.

The earliest documentary evidence of the existence of the sanctuary dates from the year 1798 or so, when shooting of birds was prohibited here.

I have visited Vedanthangal in January of two different years, and each time there were both plenty of water and plenty of birds nesting. The trees were literally covered with birds and their nests containing eggs and chicks in various stages of development.

Here there is no colour bar, no apartheid: you can see snow-white egrets (Pl. 14, 15) nesting next to sooty-black cormorants. There is no bullying of smaller "members" by larger ones: big birds such as openbill storks (Pl. 9) and grey herons breed peacefully next to smaller ones such as white ibises (Pl. 13), night herons and pond herons. Indian darters, or snake-birds, are also there.

There is no distinction because of different languages or different places of origin: all the above species intermingle together without fuss or disagreement. Only the spoonbills, when I was there, seemed to occupy separate trees.

The nests are rough twig platforms, constructed without any architectural skill or comfortable linings. The birds and their nests can be easily watched from the dam or *bund* on which there are shady trees to make one's visit very pleasant.

Although there is a boat for close-up inspection and photography of the birds, its use is discouraged by the villagers — so zealous are they in the care and maintenance of their sanctuary. So I was not able to do any close-up photography on my visits.

*

Close to Mysore city, in fact only nine miles from it, is the bird sanctuary of RANGANTHITTOO, which is 1.66 square miles in extent.

It used to be called Srirangapatna, and consists of islands in the sacred Cauvery river. Coracles or basket-boats are maintained by the Forest Department for ferrying visitors across the river.

Openbill storks, white ibises, night herons, Indian darters, cormorants and cattle egrets can be seen here most of the year, but the breeding season usually lasts only from June to August.

Where do pelicans breed in India? This is a question that has often intrigued me, and I have continually been asking people during my travels round India where these large birds can be found nesting. In Assam I have seen many pelicans in Kaziranga, and on the river Manas, but their breeding habits have remained a mystery until recently, when a nesting colony of pelicans was found in Kaziranga Sanctuary in January 1961.

But the largest nesting colony of spottedbilled pelicans was discovered by K. K. Neelakantan in Andhra State in 1946. He went there again in 1959, and gave me a lot of information on how to get there.

So in January 1960 I caught the Madras mail train from Calcutta, and got off at Tadepallegudem. Thence it was about twelve and fifteen miles to the villages of Aredu and Kolamuru, where the birds were nesting. I stayed in a little Rest House near by and spent several days filming, photographing and watching them. I think I am possibly the first person to do any serious photography of pelicans in India (Pl. 10-12).

I found it all most fascinating. As at Vedanthangal, the birds are given some measure of protection by the local villagers — not so much for their *guano* (though they are aware of this benefit) but simply because of the normal courtesy and hospitality usually found in India.

"The birds visit us every November from all parts of India and do us no harm", some of the villagers told me — through an interpreter, for they spoke only Telugu.

The following day I found that I was unpopular with them. They were evidently suspicious of me with my cameras, tripod, photographic hide and other paraphernalia.

"He has come to suck the blood out of our pelicans," they told the Range Officer who was accompanying me.

So the Range Officer explained to them that I was a member of the Indian Board for Wild Life, and that so far from harming the birds I was going to be of great help to them. They seemed to understand, for I got their co-operation from then onwards.

I found about 1,500 nests of the grey or spottedbilled pelican near Kolamuru village, spread over an area of about two square miles of well irrigated and cultivated rice fields. The nests were in the trees which had been planted along the narrow *bunds* or embankments which carried the irrigation water and divided the fields.

In the famous pelicanry on the Sittang river in Burma, discovered by Oates in 1877, the place was described as "silent". Oates's words were, "Notwithstanding the millions of birds which breed in this forest, a most wonderful silence prevails. The pelican seems to be perfectly mute. . ."

I did not find the Andhra pelicanry like this. The noise of the nesting birds could be distinctly heard a quarter of a mile away, while at close

quarters the moaning, harsh grunting, high-pitched yap-yapping and extraordinary clapping noises are very loud. I made a tape-recording of all this.

On the first day when I walked along, looking for suitable nests to photograph, a sudden loud clapping noise made me turn round sharply and order the boys carrying my equipment not to frighten the birds. Their surprised innocence told me what had really happened. On watching the birds carefully, from time to time I saw one of them crouch down in its tree, its head back and opened beak up, and then came the loud noise like the clapping of a man's hands. Why they do it, I don't know.

There are so many things that we do not know, not only about pelicans but also about most other birds and mammals. In the case of gregarious creatures, their social life is as easy to study as it is fascinating to watch.

I always think that there are such splendid opportunities for students, and even professors for that matter, of zoology in India to leave behind their laboratories in the towns and do some such studies in the field. That American "monkey man" at Bandipur had come many thousands of miles to study bonnet monkeys: how much easier it is for students in India to conduct such studies.

An extraordinary thing about the pelican is the large pouch of its lower mandible, which has inspired the limerick that the pelican can hold more in its beak than its belly can. This lower mandible consists of two flexible arches, which support the large elastic pouch of naked membrane. This pouch serves as an ideal "landing net" for scooping up fish, and is very useful when the birds do community fishing by forming a line or semi-circle and driving the fish into the shallows. The upper mandible terminates in a hook or "nail", which must come in useful when dealing with a larger fish.

I noticed that whenever the birds became excited in any way, the pouch was extended giving the whole beak a thick, triangular appearance.

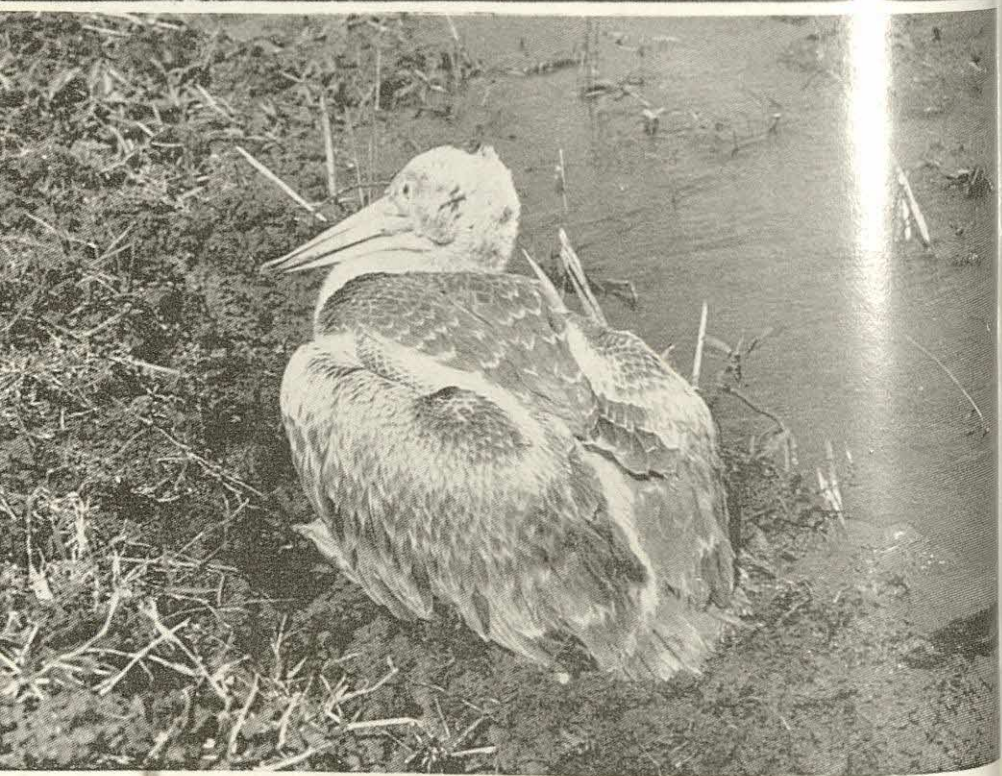
I selected a suitable tree in which to fix my cloth hide, from which I could look down on to some of the nests at close quarters. By entering the hide and remaining hidden and silent, I could observe the private family life of the birds from a distance of only a few feet.

Sitting in a hide close to birds which do not know that you are there is an exciting and unforgettable experience. From my position I could see dirty-white eggs, naked little new-born chicks, older chicks covered with snow-white down and still older ones with grey-brown feathers beginning to sprout.

Each time, as I entered the hide, the adult birds would fly away. The boy accompanying me would then depart, and the birds would return, thinking that I had gone. Huge wings outstretched and webbed feet pushed for-



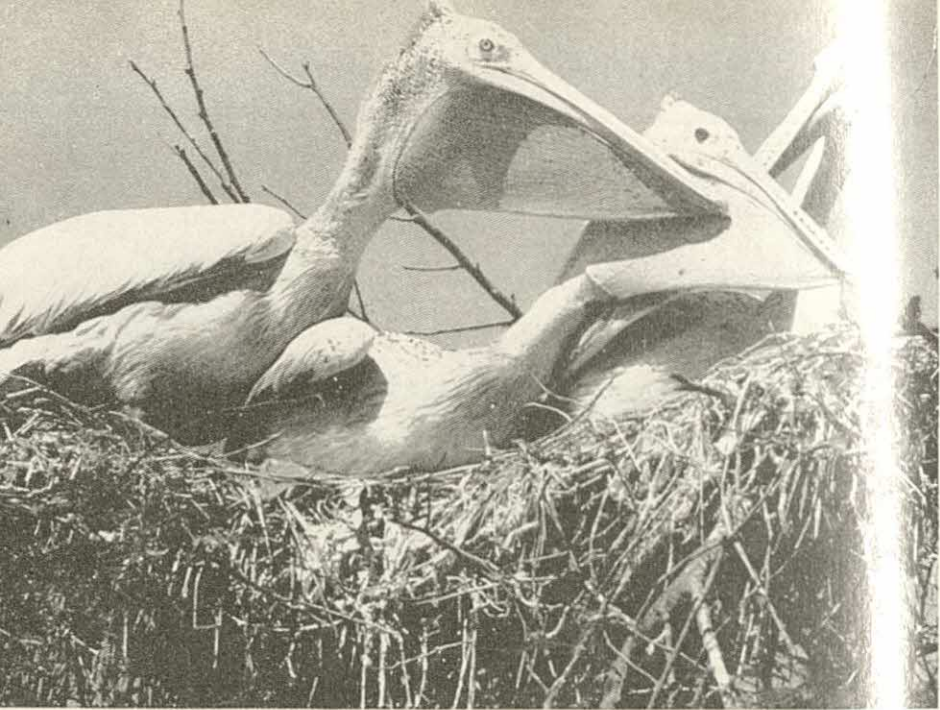
9a. Countless water birds breed at Vedanthangal in Madras State
b. A pair of openbill storks at their nest



10a. Some of the pelicans were nesting in palmyra trees
b. If a young bird falls from its nest, it is abandoned by its parents



11. One of the adult spottedbilled pelicans and its chick



12a. Three nests each with two eggs. When excited, pelicans extend their pouches

b. The chick almost disappears into its parent's pouch when feeding



13. This purple heron shares a tree with white ibises at Bharatpur. They are all shading their young chicks from the hot sun



14. A smaller (intermediate) egret at its nest (note absence of crest)



15. In the breeding season the little egret grows a handsome crest and 'aigrette' feathers



16a. Cormorants busy fishing below one of the sluice gates
b. This spoonbill's nest was very low down, near the water

ward, they would settle on the swaying branches. Then followed the usual shuffling of breeding birds in a colony.

Next, those with eggs settle down to brood, and those with babies started to feed them.

On one branch I noticed that there were two nests, but three birds always alighted. The two which owned the nests vigorously pecked the third one — which had no nest. Possibly this hapless bird was an unmated one, and I felt sorry for it; but nature has no sympathy for the weak or the unfortunate!

The feeding was fascinating to watch. Like cormorants and darters, pelicans feed their chicks on partly digested fish which is regurgitated. A parent bird would look very solemn, almost ill. Then, with a hiccup or two, something would come up its throat, and a chick would be tenderly and carefully nudged into feeding activity.

Soon the head and neck of the chick, in fact the whole body of the chick if it happened to be a very young one, would disappear into the pouch of the parent (Pl. 12). Sometimes two or three very young chicks were all inside a pouch at once, feeding avidly, totally eclipsing any sword-swallower's act.

After seeing parent pelicans attending to their chicks, I was reminded that the pelican is fabled for its extreme devotion to its young. In English heraldic and ecclesiastical symbols the bird used to be represented as standing above its nest with its wings outstretched and nourishing its young with its blood.

It used to be blazoned as "a pelican in its piety", piety here having the classical meaning of parental devotion. I think that this fable of pelicans feeding their young with their blood may have arisen from the way in which they feed their chicks from their pouch with regurgitated food.

I have come across another fable in India: that once upon a time certain pelicans admonished their young with such violence that they killed them. Overtaken by grief and remorse at the death of their young, the parents drew blood from their breasts, sprinkled it over the dead ones and brought them back to life.

I would not myself award a prize to pelicans for parental devotion. For as you walk about the pelicanry quite a number of abandoned chicks can be seen on the ground (Pl. 10), searching for scraps of fish dropped from above. They have to fend for themselves, for once they fall from the nest on to the ground, the parent birds take no further notice of them.

Most of the very young ones that fall down would certainly die, or be eaten by jackals and dogs. A few of the larger ones were able to keep alive on their own.

In most of the palmyra and *babul* trees, in which the pelicans were

breeding, there were often twelve to fifteen nests in one tree. Sometimes these nests were all touching each other, like a string of large beads along a branch.

The chicks, two or three in each nest, used to lurch about and play, and often got all mixed up. On one occasion, when I was settling into my "hide", I called a boy up and got him to sort the chicks out and put them in their own nests, which I knew by then.

But almost immediately after the boy had left, the chicks got all mixed up again. The parents, however, on their return seemed to know exactly which were their own offspring.

Although the pelican is a large, ungainly-looking creature, once it has managed to become airborne it flies gracefully. With legs up, head well back on the shoulders and large bill resting on the front of the neck it can sail through the air with little effort.

Every day I watched pelicans doing "community soaring". Probably the mates of brooding birds, they wheeled round and round on the thermal currents in the same way as vultures do, and soon reached a great height.

Then I discovered something which I think is new about pelicans. Each day at about 2.30 to 3.30 p.m. I noticed that some pelicans left the community soaring at a great height, and wheeled round and round on their own. Then suddenly a bird would start and do aerobatics — twisting, turning, rolling, diving. Out of sheer *joie de vivre*, I presume.

There were a few pariah kites and the usual crows in the pelicanry. But very many Brahminy kites were flitting about everywhere, flashes of chestnut-brown and white, in search of fish dropped by the pelicans.

It is reassuring to note that, although the pelicanry is not a sanctuary, the local inhabitants are giving the visiting birds a sort of traditional welcome and protection. The Visnohis, who inhabit parts of Rajasthan, also strictly preserve the wild animals and birds of their own localities and do not allow outsiders to come and shoot. If only the people of certain other parts of India would do the same, the position of wild life would not be so precarious.

The Breeding Birds of Bharatpur

In recent years there has been a very slight but perceptible increase in "wild life awareness" in India, and one of the results of this has been the discovery of several more colonies of breeding water birds, each a wonderful spectacle of many species living and breeding together in harmony.

For instance it has recently been found that there is a huge colony of nesting water birds in the Sunderbans, seventy miles south of Calcutta. This place, called SAJNEKHALI, is now a sanctuary, and is said to have about 15,000 birds in the breeding season, which is June, July and August.

But the most famous water bird sanctuary of India is two miles from Bharatpur, which is about 100 miles south of Delhi, in Rajasthan. Its name is KEOLADEO GHANA. Those who know it well refer to it as "the Ghana", but in print this looks like a certain country of Africa to those not familiar with India!

This place used to be the private wildfowl shooting preserve of the rulers of the old princely state of Bharatpur. Fantastic numbers of duck and geese used to be shot here by parties containing all the famous people of India, from the Viceroys downwards.

In a shoot for Lord Hardinge in December 1914, 4,062 birds were killed by forty-nine guns. In a shoot in November 1916 for Lord Chelmsford, no less than 4,206 birds were shot by fifty guns. In November 1938 when Lord Linlithgow was present, 4,273 birds fell to forty-one guns. This latter occasion seems to have been the record.

The Maharaja still retains the right of holding shoots in the area, where fifteen or more species of migratory duck and two species of migratory geese arrive to feed during the winter months. Pelicans and Siberian cranes also come here for the winter.

But during the other months of the year, that is from July to October, the Ghana is a breeding water bird sanctuary, for the non-migratory water birds which come here from various parts of India.

The success or partial failure of the breeding of these water birds each

year depends on the amount of rain water, and on the amount of impounded water let into the area from the local irrigation works. Thanks to the untiring efforts of Salim Ali, the Maharaja and the Rajasthan Forest Department, the amount of water in recent years has been sufficient to enable scores of thousands of birds to come and breed.

I always couple the Ghana in my mind with the name of Salim Ali. For not only is he India's leading ornithologist, but also he has done so much for the protection and success of this particular sanctuary. And also, the three times that I have been there, in September of 1957, 1961 and 1963, I had the privilege of being there with him.

In 1957, we, together with Loke Wan Tho, the bird photographer and ornithologist of Singapore, were the guests of the kind and very hospitable Maharaja. In 1961 and 1963 I stayed in the sanctuary Rest House, which is a gift of the Maharaja to the State Forest Department, in order to be nearer to the nesting sites of the birds.

On the 1957 visit I listened intently to everything that Loke had to say about cameras and bird photography. For he is undoubtedly one of the world's best bird photographers, and much of his work has been done in India, in company with Salim Ali. I remember him saying that a larger sized camera than 35 mm. was preferable, because a larger negative was bound to give a better and bigger enlargement.

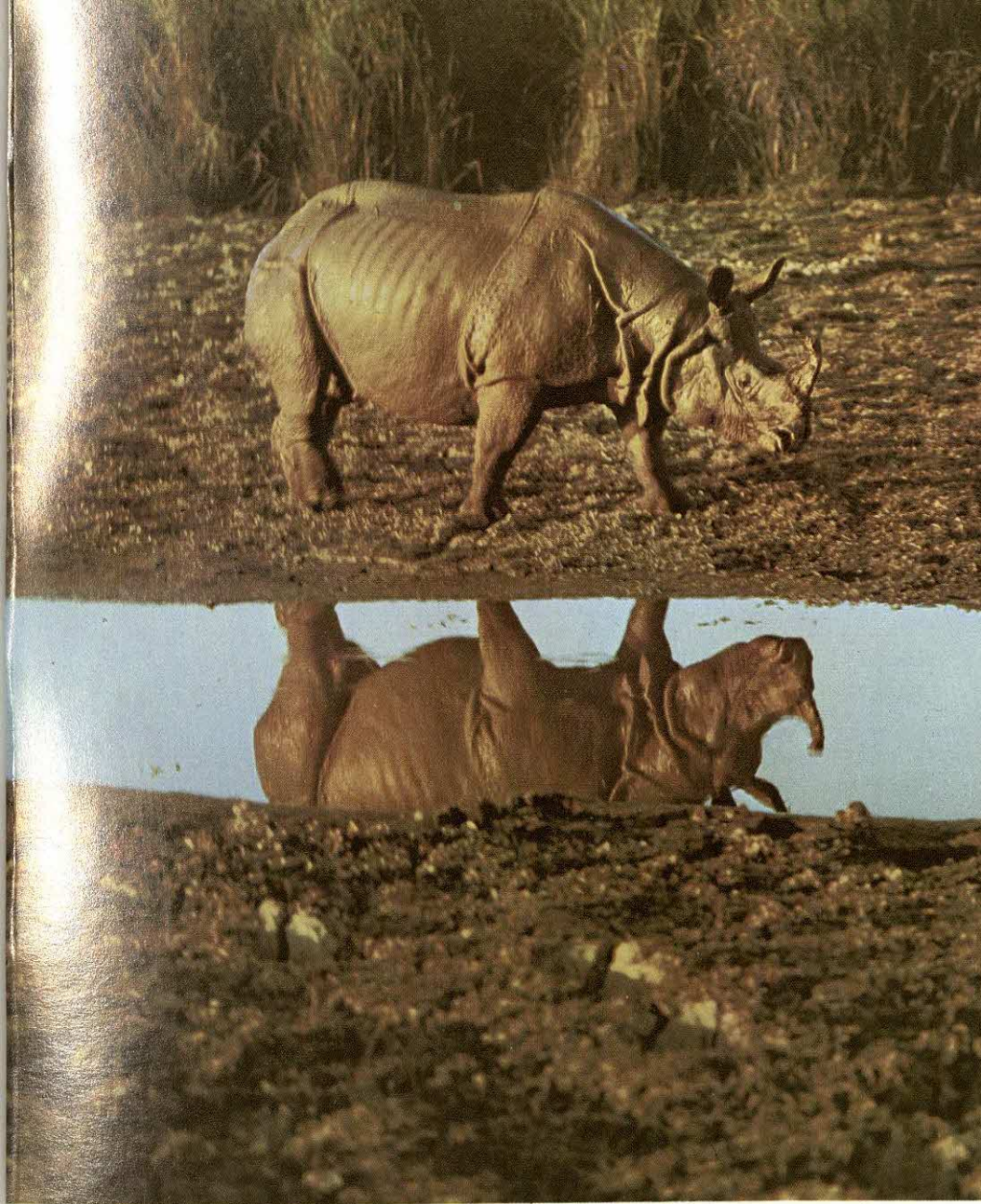
I use both a 35 mm. camera, with 135 mm. and 200 mm. tele lenses, and also a $2\frac{1}{4} \times 2\frac{1}{4}$ in. one, with a 250 mm. tele lens. I find that there is a lot to be said for both 35 mm. and the larger size, depending on what sort of photography one is doing.

I also remember him repeating "Every feather! Every feather!" That appears to be his motto, and his results usually bear this out.

When I was with him, he was trying to get exhibition pictures of white ibis. For this purpose every detail had to be right. For three mornings and three afternoons he waited in his hide close to the birds on their nest — without taking a single photograph. On the fourth day, however, everything went well, and he made thirty or forty exposures. What exemplary patience!

Salim Ali is a slim, elderly man, now heavily disguised behind a neat, white beard. He is a most useful companion to have on an expedition. For when he is there one need not look up his very fine books¹ to see which bird you have seen or for other details. His remarkable memory and long years of experience in every part of India can give you all the answers

¹ The best known of Salim Ali's books are *The Book of Indian Birds*, of which the sixth edition came out in 1961, and *Indian Hill Birds* (1949). A companion book of the former, *The Book of Indian Animals* by S.H. Prater, is now out of print but has been revised and is in the process of being published by the Bombay Natural History Society.



1. The evening sun has turned this Indian rhino to the colour of gold



- 2 A painted stork tries to shield its mate on the nest from the sun;
a shag sits overhead

immediately, and a lot more besides.

In addition to being India's leading ornithologist, Salim Ali is also her most experienced naturalist in other fields, for he has observed, photographed and filmed most of the important mammals of India. He has also served on several field investigations for different States, and is Vice-President of the Bombay Natural History Society.

There are many roads and *bunds* criss-crossing the sanctuary, and bird-watching can be done from these. But for those who wish to see and photograph the birds and their nests more closely, there are small, flat-bottomed metal boats and boatmen available.

The early morning journey in a boat through the sanctuary is a most unforgettable experience. It is cool then, and everything glitters with jewels of dew in the bright silvery sunlight. The grasses and reeds part to let the boat through.

Now and then you find open sheets of water, with no grass. Here several kinds of water lilies are in full flower, in various shades of white, pink and pale blue. Other tiny flowers of white and yellow, strung together like beads on long green strands, gleam on the surface of the clear water.

Among this fragile and scanty vegetation some resident birds are feeding, and sometimes nesting: moorhen, purple coot, dabchick and pheasant-tailed jacana. This last bird has enormous but spidery feet which enable it to walk about on what appears to be the surface of the water: the aquatic plants in the water take the weight of the bird.

The silence of the peaceful scene is only broken by the quiet swish as the boat moves through the water, and by the distant chorus of so many water birds at their nests.

When doing serious close-up photography here, the technique is to take out two of these boats, with two men to assist you. You select the tree and the nests you wish to photograph, study the direction of the sun for morning and afternoon photography and many other things, and then fix your cloth hide in the right position on one of the boats.

Bamboo poles driven into the ground below the three or four feet of water serve both to anchor the boat as well as for tying the hide in position. You then sit with your equipment and perspire like anything, while the two men depart in the other boat.

You give them instructions how far away to go, and what signals you will give for them to return to collect you.

I used to have two pieces of cloth, used for wrapping up camera accessories. If I hung the red cloth up at the back of the hide, unseen by the nesting birds but clearly visible to the men, they had to take their boat farther away. If I fixed the green cloth, that was the signal to bring their

boat up to mine. No cloth at all meant "Stay put".

This system worked very well. Sometimes if a bird was in the wrong position, or started to shut its eyes and sleep, I would hoist the green cloth at the back. The men would start to bring their boat towards me, and that would make the bird instantly alert. I would take its picture and remove the green cloth. The boat would stay put. A showing of the red cloth would make the boat go farther away, if necessary.

I had two men with me. One was a "handyman" sort of person I had brought with me from Assam; and, as could be expected of a man who lived in the plains of such a wet region, he was an expert boatman. The other man was a local labourer detailed to accompany me as "boatman" by the Range Officer. I don't think he had ever been in a boat before, because he hadn't a clue what to do with the paddles and poles and water. But he was a willing and cheerful worker.

I don't think he knew much of things on the land either, for he had recently fallen off a bullock cart and hurt his knee. One day while returning from photography in the boat, the following conversation took place in simple Hindi:

"My knee is hurting. It is not getting better," said the "boatman" who knew nothing about boats, baring his leg.

"Then you should ask the Doctor Sahib for some medicine," said my handyman, who was expert with boats.

"Which Doctor Sahib?" I asked.

"The Salim Ali Doctor Sahib," replied the handyman.

"The Salim Ali Sahib is a doctor of birds, not of medicine," I explained. Then I continued, reflecting on my thirty-odd years on tea estates, in charge of estate doctors, hospitals and the like, "Possibly even I know more about medicines. You come to me afterwards and I'll give you some medicine for that leg."

For the next four days outside my room there were hot water, antiseptic, bandages and the "boatman". The results were nothing short of miraculous. The delight on his face was a pleasure to behold, and the faith he had in me was astonishing. On the fifth day he joyfully declared that he was cured; and I think he was, fifty per cent actually and fifty per cent psychologically. I, too, felt better after all this.

I usually fixed my boat and the hide in position each evening, after an afternoon's photography, so that the birds had all night and early morning to get used to it. By doing this, the birds used to return to their nests very quickly every time my two men left in their boat.

The chief discomfort was the heat and humidity while sitting in the hide in the metal boat. I used to do photography for a minute, and then for the next minute or more I had to dry myself with a towel — so great was the

perspiration.

It was always a relief to come out of the hide into the fresh and cooler air. There was usually a slight breeze blowing outside.

But any unpleasantness was offset by the immense enjoyment I derived from seeing the birds going about their business of raising a family at very close quarters, quite unaware of my presence.

Usually I could see four or five different species from the tiny windows in the front and sides of my hide. Though my camera on its tripod was probably trained on to one particular nest, yet with my other camera I could "shoot" other birds at other nests in the vicinity.

And all the time, in addition to getting pictures in colour and in black-and-white of each species of bird, I could also relax every now and then and just enjoy watching them and their ways.

I was amused, for example, at a pair of those magnificently coloured and neatly tailored painted storks. One of them, possibly the gentleman, stood in stately fashion at the edge of the nest, doing not a stroke of work beyond occasionally preening its feathers. The other, its mate, was busy for a full hour arranging and repairing the nest — and then sat down to incubate (Col. pl. 2).

I have not seen these beautiful painted storks at Vedanthangal. But a few pairs have been going to the New Delhi Zoological Park for breeding in recent years.

A pair of spoonbills (Pl. 16) stood silently in their empty nest, with hardly a movement. They looked as though they were waiting for ideas, or for something to happen. Something did happen, for next day there was an egg in the nest.

Another spoonbill was sitting on its nest, incubating. Three feet below it, on the same tree, was a little egret on its nest. Each time one of the birds moved at all, the other one would become agitated and raise its crest, looking in all directions. And a spoonbill with its crest raised looks really amusing.

Yet another spoonbill, on alighting on its nest, took great trouble to screen the sun off its two eggs by stretching out its wings. Sometimes it met with no success at all, and the eggs gleamed brightly in the sunlight.

Little egrets (Pl. 15) in their breeding plumage of crest and "aigrette" feathers made a wonderful sight in the bright sunlight, when one of them relieved its mate while incubating. There seemed to be a sort of ceremonial greeting, with all their plumage raised and lowered.

Grey herons are about the most graceful of all birds while flying and alighting at their nests. Purple herons (Pl. 13), more colourful but lacking crests, were much more wary. Night herons, comparatively small birds, have very long white crests and blood-red eyes.

Indian darters, or snake-birds, have long and slender S-shaped necks, narrow heads and dagger-like bills — all streamlined to enable them to swim underwater and spear their fishy prey. They feed their young in the same manner as do pelicans and cormorants: the chicks thrust their heads right down the necks of the parent birds to eat the half-digested, regurgitated fish.

Openbill storks, on the other hand, regurgitate the half-digested fish, and the young ones gobble up their food avidly from the bottom of the nest.

Incidentally, no one has yet explained why openbill storks have curved, open bills. They feed largely on snails, and in some Indian languages they are called "snail breakers"; but other birds also feed on these snails, and do not have curved, open beaks.

Each time that I left a site and took the hide and the boats away, I would stop some distance away and look back to watch the birds return. It was always a relief to know that my photographic activities had not unduly disturbed the birds. I don't think there were any desertions of nests due to my taking of these photographs.

The first time I was at the Ghana with Salim Ali, I went out with him when he did some ringing of baby openbill storks. One of the forest guards was helping, and his name was Lookhia. Apparently in the old days he had been on big shoots and some very important person who knew only English had addressed him several times with the words "Look here!" This "name" stuck.

One of the openbills ringed in September 1947 was recovered four months later in Uttar Pradesh, about 350 miles away. Another was recovered sixteen months later in Bihar, about 510 miles away.

During my 1961 visit to the Ghana, Salim Ali was leading a team to do mist-netting and banding of small migratory birds. This was part of a regular spring and autumn programme, conducted for the World Health Organisation and the Bombay Natural History Society, to try and discover if migrating birds are responsible for carrying virus diseases.

A virus disease has been diagnosed in a forest in Mysore State, very similar to one prevalent in a certain part of Russia. The Mysore virus disease can be fatal to both human beings and to wild monkeys. A few captured birds have been found carrying ticks: these are extracted and sent to Poona for examination.

One of the finest thrills of bird watching in India is the fantastic courtship dance of Sarus cranes (Col. Pl. 3). Huge wings outstretched, they bow and prance round each other — a beautiful and exciting thing to watch.

Sarus cranes pair for life, and the birds are devoted to each other. If one

of a pair is killed, the survivor will haunt the scene of the tragedy for weeks, crying distractedly. There is a belief that a surviving mate will pine away and die of grief.

Symbolic of a happy marriage, they are protected in many parts of India by popular sentiment. Consequently they have become confiding and unafraid of villagers and passers-by.

There are usually several pairs of these spectacular birds breeding in the Ghana and its environs. Large piles of grass and rubbish keep their eggs, usually two, above the level of the water.

I was able to photograph them, both in 1957 and 1961. The latter year was more successful for me, because I had by then become better equipped with hides and experience.

Standing on an embankment road, I watched a pair of them at their nest. One of the birds was sitting, while the other was feeding nearby. It was time, apparently, for the one to relieve the other at incubating, and the feeding one stalked up to the nest.

The one, which had been sitting, stood up. One egg, pinkish white in colour, gleamed in the sunshine. The other egg had just become a chick.

The golden-yellow chick roamed around the nest, exploring its new world. Then it jumped into the water and swam to a patch of tall grass nearby.

Some warning note from its parents made the chick freeze, and lie hidden — at least it thought it was hidden. I could see it clearly from the road, because I had seen it go there. On a casual wade through the water and grass another person would not have noticed it, because of complete lack of movement.

The relieving bird settled down to brood, and the other walked away. Later it called the chick, which rose and followed its parent on a feeding expedition, for the first time.

Next day I put my hide about forty feet, and then about thirty feet, from the nest. I stood in it, in about one foot of water, to take photographs. It was hot and steamy, but this was not the main difficulty here. It was leeches.

Now I am used to leeches. They are fairly harmless, and only suck your blood. And in any case, people in the old days used to pay large sums of money for leeches to reduce their blood. The technique is to knock or pull them off, or better still to put salt on them — which immediately kills them. Then when you get home you dab some antiseptic liquid on the places where they have bitten, and everything is all right.

These were water leeches which swim well. They are about the size of a rather large fountain pen — that is before they get swelled up with your blood. So I spent one minute in pulling them off and throwing them away, and then one minute in focusing my camera and trying to take a picture.

And then again a minute in pulling off the leeches, which lost no time in returning to the feast.

To make things easier, I called up one of the men, and he crouched down and pulled off and kept away the leeches from both of us, while I concentrated on photography. The water was clear and warm, and the object of my endeavours so worthwhile, that I never bothered about the minor discomforts down below.

It is interesting to watch cormorants feeding (Pl. 16). They float on the water, but much lower than ducks do, with only their necks and the tops of their backs showing. Very accomplished divers and swimmers, they do all their fishing below the surface, catching small crabs, tadpoles and frogs as well as fish. The little cormorant is the most common in India, the large cormorant and the intermediate cormorant (or Indian shag) being rarer.

Peafowl are everywhere in this area, and cock birds do not let you forget their existence, with their loud screams of *may-awe* in the evenings and early mornings.

These birds are protected in most parts of west, central and north India by legislation and, more significantly, by popular and religious sentiment. For the peacock is the vehicle of Saraswati (goddess of learning), Kartikeya (god of war) and Subrahmanya (god of yogic powers).

Consequently these spectacular, and to Westerners, exotic, birds have become quite common in these parts, often proudly wandering and even nesting in villages totally unafraid of man. In north-east India the peacock is rarer and hitherto not protected, but it is hoped that legislation will be introduced in these States to give it full sanctity.

It is recorded in history that Alexander the Great took back with him from India to Greece two hundred peafowl, and from Greece the birds spread to other countries of western Asia, north Africa, Europe and eventually to America. The Moghul emperors were greatly attracted by the beauty of this bird, and Shah Jehan's famous peacock throne was designed, "its pillars of emerald being surmounted by the figures of two peacocks, ablaze with precious stones".

Incidentally, the splendid ocellated "train" of the peacock is not really its tail, but its upper tail-coverts enormously lengthened. For display these are erected and fanned out before admiring hens. Its crest feathers have fan-shaped tips, while those of the Burmese sub-species have pointed tips.

Peafowl, as well as langurs, are well-known as being among the first wild creatures to notice the approach of a tiger or leopard in the jungle and to sound their call of alarm, warning their fellow creatures that a predator is on the prowl.

Peacocks shed all their tail feathers each year and grow new ones. The old shed feathers are picked up and made into fans and widely sold in bazaars and elsewhere.

"The gorgeous peacock is the glory of God", says a Sanskrit verse, and in a country of pageantry and colour it is only fitting that the peacock has been officially proclaimed as the national bird of India.

An added attraction of the Ghana sanctuary is the presence of a few black-buck, chital and other animals that roam about in the drier parts.

It was here, "where deer and antelope roam and play", and where she had "taken pictures of deer and a newly born fawn" that Ylla Koffler was cremated in March 1955. She was killed in an accident near Bharatpur while photographing a country fair. The story of her camera *shikar* in India is well told by Suresh Vaidya in his book *The Jungle Lies Ahead*.

She was one of the world's best photographers of animals, and I am proud to have assisted her in arranging her tour in India, and of advising her of the various difficulties which beset the wild life photographer in this country.

She stayed with me in Assam in the month before she met with the accident, and I introduced her to the rhino, wild buffalo, wild elephants and other inhabitants of Kaziranga. I admired greatly her courage and vivacity, and her ability to select and compose what would make a really good picture, showing the typical, representative character of the subject.

But she found making her book *Animals in India* vastly more difficult than her *Animals in Africa*. For, as I had told her, wild life in Africa is more numerous, largely diurnal and inhabits open, sunny places. Whereas wild animals in India are rarer, mainly nocturnal and their habitat dense.

She wrote to me from Mysore in the early days of her stay in this country, saying, "The grass is very high and the forest dense, and I have not been successful in wild life photography. I sometimes wonder how I will ever do in my book." She correctly anticipated having to include pictures of tame animals, such as Brahminy bulls, domestic buffalo, temple monkeys, circus animals and so on in her book.

She sleeps in the forest at Bharatpur, near the wild animals and birds she loved so much. It is a pity she did not live to see the Ghana and its birds in all the glory of the breeding season, a sight which would have given her so much opportunity to exercise her consummate photographic skill and which would have appealed so much to her imagination and kindly nature.

The Swamp Deer of Kanha

If you were to point to the middle of the map of India you would probably touch the central Indian plateau in Madhya Pradesh — the old Central Provinces. Here the undulating hills of the Satpura Range rise to some three thousand feet or more, and the forests are mostly of the stately and beautiful hardwood *sal* tree, from which most of the railway sleepers are made.

A feature here is the existence of open grassy areas, known as *maidans*. Undulating grassy slopes, dotted with trees here and there, reminiscent of English parkland. Only deer are needed to complete the scene of enchantment. And deer there are, many of them — particularly in the famous KANHA NATIONAL PARK.

This 97-square-mile park is the old "Banjar Valley Reserve", and half a century ago it was simply teeming with wild life. The main central *maidan* of Kanha is the place in India which most resembles Africa for the numbers and variety of herbivorous (and predatory) animals which can be seen out in the open in daytime. Indian swamp deer, chital, blackbuck and gaur — all these can be seen within one square mile during the months of February to June, for in July the monsoon arrives and the park becomes inaccessible and closed.

Also, as in Africa, it is interesting to note that as long as you stay in your jeep or car, the animals do not mind. The vehicle can go quite close. But once you get out and approach on foot — away they go.

Kanha is visitable from about the beginning of November, when the rains have stopped and the roads dry up. I have been there at the very end of October and into the first week of November, and was entranced by the lovely autumnal colouring: beyond the yellowing grass were various trees of gold, chestnut and brown, and, behind all, the rich dark green of the lofty *sal* trees.

I have been there in April when the yellow grass has died down, or been eaten, or been burnt off by the forest staff to improve the grazing. A faint



3 Sarus crane at its nest



4. Indian swamp deer. Above, a cattle egret on a hind, which seemed to be in labour; below, part of a school of stags

tinge of green shows where the new shoots of grass are coming up, and the *sal* trees then are changing their leaves. These trees are never bare, being semi-deciduous. The old leaves turn golden brown and drop off, and all the time the new, bright, pale green leaves are taking their place. At this time the fiery blossoms of the "flame of the forest" are nearly over, only a few dying embers still glow on the jagged branches.

I have also been there in May after the *sal* trees have regained their mantle of dark green, and when the *maidans* are recovering their carpet of paler green.

Kanha is famous for its swamp deer (Col. pl. 4, S. pl. 20-22), a species of deer only found in central, northern and eastern India, and in southern Nepal. It does not exist in Pakistan, Ceylon, Burma or in any other country. A little smaller than the sambar, swamp deer are known as *barasingha* (twelve-pointer) on account of their splendid antlers, but one must be careful here because the Kashmir stag is also called *barasingha* by some sportsmen.

Swamp deer do actually live in swampy areas in northern Uttar Pradesh, where they are called *gond*, and in Assam; and possibly the hooves of animals in those wetter regions are more splayed out to give them greater support in soft ground. But the *maidans* of Kanha are undulating and mostly dry. It has been suggested that at one time these deer may have existed in swampy areas and then moved to drier ones; but this need not be so, for I have known swamp deer in Assam living in dry thatchlands far away from swamps.

A characteristic of swamp deer is that they go about in herds or "schools" of the same sex or age-group. On the *maidan* at Kanha you can see "schools" of hinds, and I have seen as many as forty-three in one group. In another place you'll see a "school" of adult stags, all living peacefully together. Somewhere else you'll see a small party of young stags and young hinds of about one year old, animals of the same age-group. Some other gregarious deer are like this, and I recall the wonderful sight once when the Duke of Bedford (the present Duke's father) showed me his Père David's deer, all in "schools" according to sex and age-group, at Woburn Abbey in Britain.

I have seen the master stag with a herd of hinds at the end of the mating season in April, and I have wondered how the master stag gains that position, for all the other adult stags were complacently grazing some distance away. There are presumably fights between stags, though I have never seen one. What wonderful opportunities there are for Forest Officers, zoology students and others, to spend a lot of time with these beautiful deer and make a careful study of their habits!

When I was last in Kanha, in May 1962, I spent some time in a jeep close

to a "school" of sixteen adult stags, watching them, fascinated. I was trying to see whether the leader of the stags, which had smaller antlers but looked an older animal and which usually led the way when they all moved off, was also the most dominant among them, the No. 1 of the group. Suddenly two other stags started sparring: one lowered its head and the other accepted the challenge and they locked antlers in a brief show of strength (Pl. 22).

I turned round to speak to the park Range Officer, who had kindly accompanied me. He was half asleep, chin in hand, face turned the other way. I felt sorry for him. I didn't think he liked his job very much.

"What do you think those two stags are doing?" I asked.

"They are fighting, no doubt," he replied.

"Well, not seriously. The rutting season is now over. Do you know of a thing called 'peck order'?" I asked.

"No, sir," he replied, looking mystified.

"'Peck order' ", I tried to explain, "is the social rank, or order of strength, among the stags. So called because birds, particularly domestic fowls, peck each other and finally sort themselves out as No. 1, No. 2, and so on."

He started to become interested. I told him how almost all gregarious animals and birds have this system of determining the social order of individual members of a herd or flock, and that if there is a very large number of individuals in a herd or flock then each group or part of the larger body will have its own "peck order". I explained that in the case of the swamp deer it was probably the No. 7, for example, challenging the No. 6. If No. 6 walks away and avoids a trial of strength then it goes down to No. 7, and the other one becomes No. 6. If No. 6 wishes to retain its position, it must accept the challenge and prove itself stronger. It was all over in a matter of a minute or so, and the two stags resumed grazing peacefully together.

I hope the Range Officer, quite a nice fellow, will be more interested when he next sees some swamp deer stags.

Dunbar Brander in his famous book *Wild Animals in Central India* (published in 1923) states of the swamp deer that "... stags do not shed their antlers until April, and many small stags are still in horn at the end of the month." I wonder if their seasons of shedding antlers have altered at all, due to slightly changed ecological conditions (such as more regular burning of the grassy *maidans* and better protection), for all the stags I saw in the second week of May were still in hard horn!

Swamp deer in Assam, a different sub-species, have seasons different by at least several months, and stags have horns in velvet in March, April and May. I think this may be due to the fact that heavy showers of rain bring on new lush growths of grass as early as the end of March and beginning

of April, whereas this seasonal change of diet does not take place in central India till about July.

Dunbar Brander's book is the best, probably, that deals with the natural history of the mammals of central India. Its only "defect", by present-day standards, is that it is mainly written from the sportsman's point of view, and the photographs are chiefly of animals which have been shot.

How much more exciting, and more difficult, it is to "shoot" with a camera!

I think Bengt Berg, the famous Swedish naturalist-photographer, was the first to do serious photography in the neighbourhood of Kanha, in the early 1930s. His work was done mostly by flashlight and at night, and his pictures of tigers are spectacular. I was told that he had many, about twelve I think, plate cameras and set them up on "game" tracks each evening. Next morning he would inspect the results. I heard that he set his flashlight trip-wires high up sometimes, so as to catch swamp deer stags, while the hinds and fawns would pass underneath. Strange, because swamp deer can be photographed quite easily in bright sunshine in the open!

Flashlight photography of wild life has its disadvantages. Apart from the fact that you do not enjoy seeing the animals, because you are in bed while the animals are taking their own pictures, the results are often unsatisfactory — with white staring eyes, black backgrounds, and the nearest parts of the animal large and out of all proportion and perspective. Also colour film is usually ruled out.

Chital, or spotted deer, are the most common deer of India — and yet probably the most beautiful in the world. They do not separate into "schools", but stags, hinds, fawns are found all together in herds of any size from two to two hundred or more. They were very numerous in Kanha when I first visited that park in 1953 and 1954. But by 1962 their numbers had become very much less, and I think this has happened gradually, because the local Forest Officers had hardly noticed it. Census figures, obtained by a rough physical count done each year, support my observations:

	1958	1959	1960	1961
<i>Prey</i>				
Swamp deer	577	411	260	254
Chital	1,726	1,579	1,259	1,253
Blackbuck	44	52	38	44
<i>Predators</i>				
Tiger	9	11	7	18
Leopard	4	6	2	13
Wild Dogs	17	25	17	29

It will be noticed that the numbers of predators have increased. So whether the decrease in the number of swamp deer, chital and blackbuck (which numbered sixty-three in 1953) is entirely due to natural predation, or partly also due to poaching, I do not know. But the position certainly needs careful watching by the Madhya Pradesh Forest Department, under whose jurisdiction are Kanha, wild life preservation and control of predators.

Talking about poaching, a disquieting incident occurred when I was at Kanha in 1954. I was in bed at about 11 p.m. when I heard a jeep arrive. Voices of several men. Later the jeep left. At about 2 a.m. the jeep turned up again. Next morning there was no jeep and no visitors . . . An hour later I saw some servants cutting up a dead chital. "How did you get that?" I asked. "Killed by wild dogs," came the reply. I wonder . . . I duly reported the incident to the Forest authorities, but got no acknowledgment.

I cannot help thinking that, as in many other national parks in the world, the roads should be closed from sunset to sunrise. In any case, even if there was no shooting at all, who wants to see wild animals at night by headlight or spotlight, when one can see them in all their glory in daylight?

A reasonable number of predators is natural and very desirable, in order to keep the herbivorous animals alert, healthy and not too numerous. In fact one of the glories of Kanha is that you can see the "balance of nature" at work, and predators pursuing their normal activities. I have twice seen gaur which had been killed by a tiger in Kanha, and a sambar dead for the same reason. I have seen wild dogs in pursuit of a chital, and once a fox chasing a young chital hind.

Pythons have a part to play in the control of deer and rodents, and I once found and observed a very large snake of this species, perhaps nearly twenty feet long, in Kanha. It was on the ground and coiled up, in a sort of coma, and had covered itself with dead leaves for concealment. A large bulge showed that it had swallowed a chital or other such creature, which was now being slowly digested.

Most exciting of all, I think, was the occasion when I saw a small pack of wild dogs, about six in number, near some rocks in the middle of which was a large *sal* tree. I left the jeep and with my ciné camera stalked the wild dogs. They slipped away, one by one. When the last one had gone, down from the *sal* tree sprang a large leopard and bounded away! Professional jealousy — that was the reason, probably, that made the wild dogs pursue and tree the leopard.

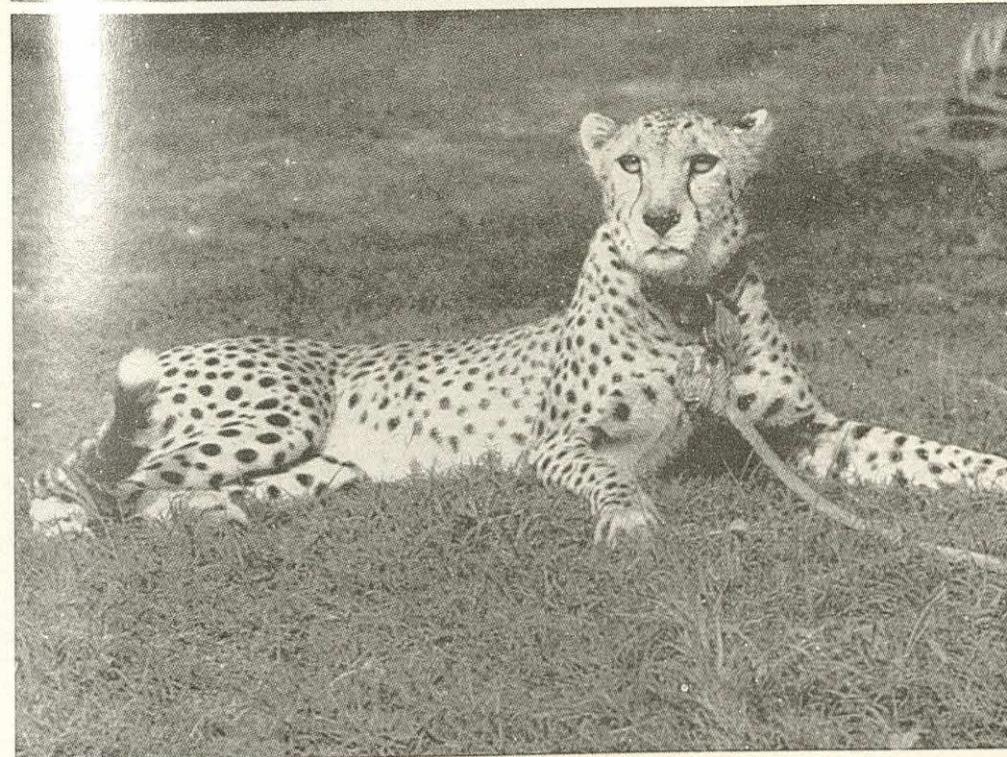
To return to chital. These are well known, especially in central and south India, for the fact that stags shed their antlers at varying times of the year, and the young are born at different times of the year also.



17. A chital stag with antlers in velvet crosses a grassy glade in Kanha National Park



18. "I noticed a purple sunbird hen fly up, hover and then proceed with building her nest *only a few feet away* from us"

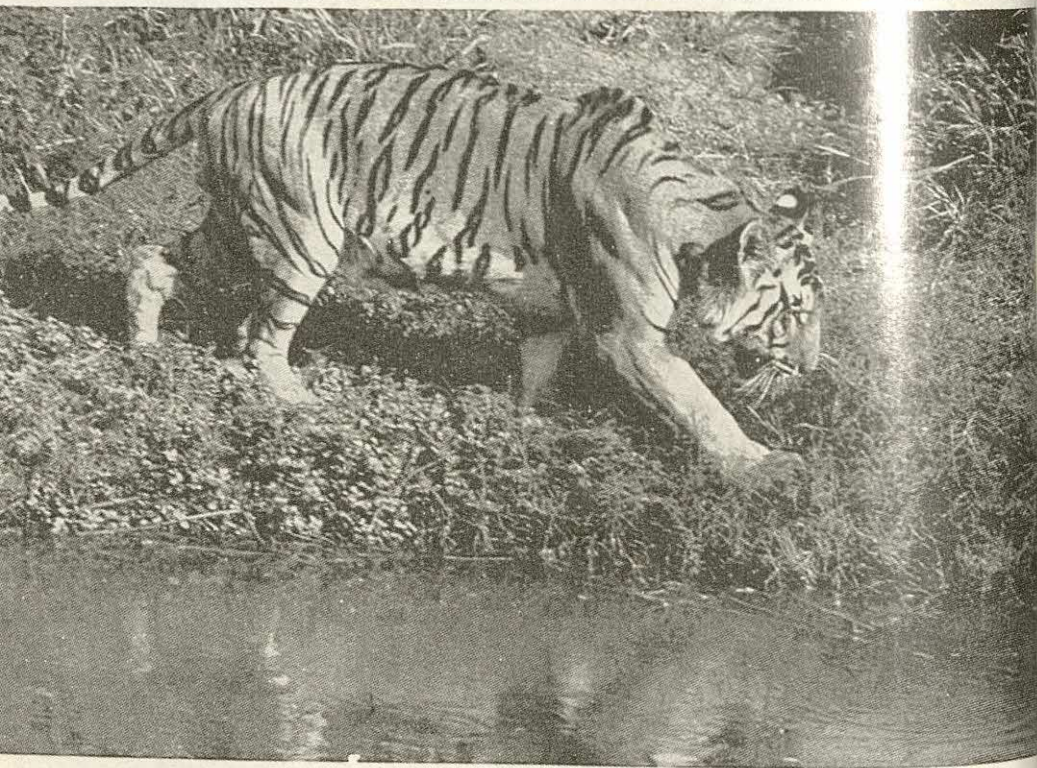
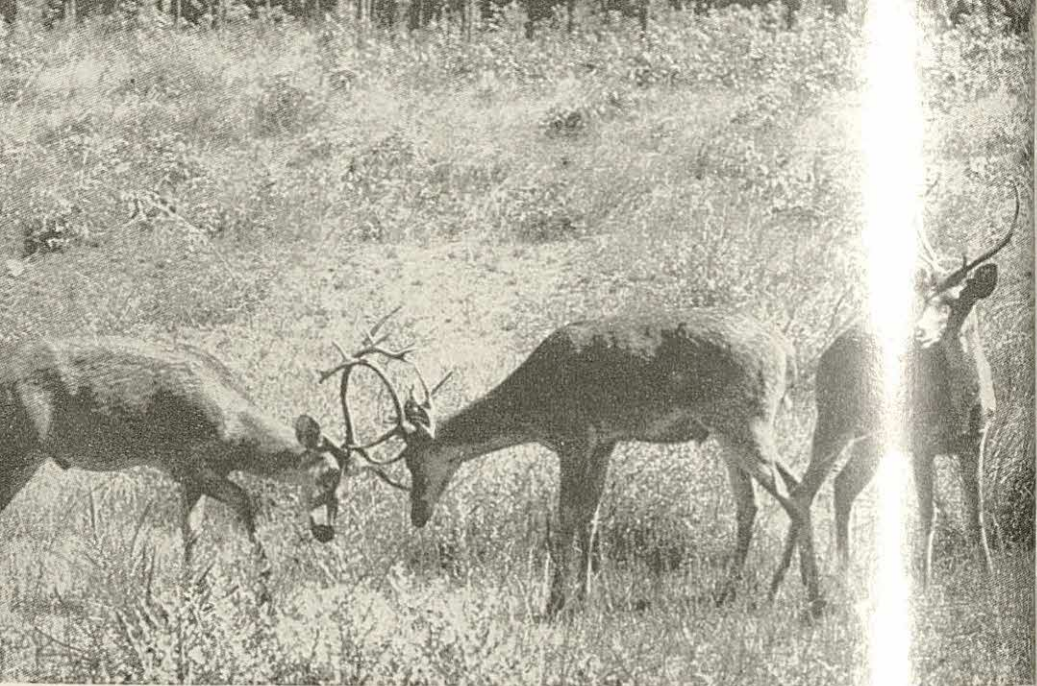


19a. Blackbuck are now becoming scarce in India. A doe and a buck
b. An African cheetah in an Indian zoo. The Indian cheetah is now extinct





20 and 21. Swamp deer stags on the *maidan* in Kanha National Park



22a. "Suddenly two other stags started scrapping"
b. The tiger is very rarely seen out in the open in daylight



23a. A tiny part of the huge palace where the white tigers live
 b. The ghostly-looking tiger "rose, strode nobly forward a few paces . . ."



24a. Cunning and skill at concealment have enabled the leopard to survive
b. Normal-coloured and black cubs of a normal-coloured mother
(the father may have been black)

In former years there was always a sizeable herd of chital in the vicinity of the Kanha Rest House. When no one was staying there, I was told, these chital used to occupy the place. A Forest Officer told me he had once been there in August, an off-season month, and had counted about 150 in the compound, of which thirty were actually on the veranda.

This was most probably true, because even while we were holding a meeting, about ten of us, on the veranda of the Rest House in 1953, a chital hind tripped daintily across the compound and came straight towards us. When it got near, it stopped, stared with innocent eyes wide open and large ears forward for a few moments and then bounded off. I remember facetiously remarking that as there was no vacant chair, it could not come and join us.

One of our members, I recall, wore a coat made of leopard skins, for it was then early November, and quite chilly in the mornings. As we drove round the sanctuary, as it was then, you should have seen the chital view with great alarm their arch enemy! Little did they realise that this person was one of India's well-known conservationists and one of their greatest friends, even though so dressed — a shepherd in wolf's clothing.

Recently three more bungalows have been built in that Rest House compound, and the chital seem to have been scared away to other places.

There are, fortunately, still a few blackbuck (Pl. 19) left in Kanha, though not as many as in 1953. Only about forty to forty-five still survive. At all costs these must be preserved, because they, once such a familiar sight all over India except in the north-east, are now dying out.

Blackbuck, the fastest creatures in the world on four legs, love the wide open spaces where speed is their surest protection against enemies. Kanha is not typical blackbuck country, but these forty-odd antelope are one of the park's most precious possessions. Long may they continue to flourish.

To see them, especially the does and fawns, leap in the air as they run reminds me of the Impala I have seen in Africa.

In connection with blackbuck, I cannot avoid mentioning the Indian cheetah, traditional predator of blackbuck. Here is the grim tragedy in the long history of India's wild life: *the Indian cheetah is now extinct in India* (Pl. 19).

The cheetah, or hunting leopard (quite different from the ordinary leopard, of course), must have been common in this country in the olden days, for the Moghul Emperor Akbar (A.D. 1556-1605) is recorded as having kept 1,000 in captivity for hunting! The sad finale to cheetahs in India was in the cold weather 1947-8 when a certain "sportsman" shot three males in the same place by artificial light at night, violating the ethics of sportsman-

ship. It was thought that they were all of the same litter, and that the parents might still be in the locality — old Korea state north of Bastar, but no further report has been received in that area of any live cheetahs.

There was a rumour of a cheetah having been seen in the spring of 1952 in the Chitoor District of Madras — but this was never confirmed nor has there been any report of the existence of a cheetah in India since then. So a famous and well-known wild animal of India, the product of several million years of evolutionary development, has been wiped out by man, who is powerless to recreate even the simplest living thing.

For some years before the extinction of this animal in India, cheetahs had to be brought from Africa for zoos and for hunting blackbuck. One reason for the extinction of the cheetah seems to be the fact that they have never bred in captivity (except the ones I saw in the Philadelphia Zoo in 1957, and the ones born in the Krefeld Zoo of West Germany in 1960).

I have talked about this to the Maharaja of Kolhapur, who used to be famous for his tame cheetahs and hunting of blackbuck. He told me (in 1960) that his last (African) cheetah had died recently, and blackbuck had locally been wiped out by poachers. In the old days Indian cheetahs used to be better than African cheetahs at hunting. Neither kinds of them ever bred, though he used to turn a pair loose in a large area where they could get exercise. A cheetah was not as fast as blackbuck really, and could only catch them in the initial spurt.

He also told me about his herd of twelve white blackbuck, which had taken him twenty-five years to rear up by careful selective breeding from albino or partial albino animals. But I think these are not as famous as those belonging to the Maharaja of Bhavnagar.

Why did cheetahs become extinct in the wild state? Most certainly because their natural prey, blackbuck, chinkara (the Indian gazelle) and chital, became practically wiped out, and the pressure of human population with its cultivation and grazing was too much for them.

I have recently heard a report that the Indian sub-species of cheetah may still exist in some of the desert tracts of Iran, and I hope that further investigation will prove this report to be correct.

A most gratifying bit of news from Kanha recently, which I found during my last visit, is that the noble gaur seems to be more plentiful, and I spent several mornings and evenings photographing them.

(It is interesting to note that when a tame riding-elephant was introduced to Kanha in 1953, the deer and blackbuck were so startled they scattered and fled in alarm! Clearly wild elephants cannot have been seen in this region for many years — probably fifty or more.)

I have seen sambar, barking deer, common langur and pig at Kanha.

Hyena tracks I have also seen. Of birds, ninety species are listed here. The peafowl is happily numerous now, and apparently on the increase, and red jungle-fowl fairly common.

The red jungle-fowl is the ancestor of all our present-day breeds of domestic poultry, and is found in central, north and eastern India. In appearance it is like the bantam or game cock still sometimes seen in western countries. In west and south India it is replaced by the grey jungle-fowl, whose feathers are in great demand for the making of flies for fishermen and therefore its numbers are being carefully watched and the export of its feathers is prohibited.

Kanha possesses the advantage, or disadvantage — depending on which way you look at it, that it is remote and difficult of access. It is about a hundred miles south of Jabalpur to the north, and more than that from Nagpur and Gondia in the south. Its remoteness has prevented it from being "spoilt" by too many visitors: but also this is a headache to the authorities who wish to develop tourism and to increase the flow of visitors from within India and tourists from abroad. The accommodation is already complete: transport and catering are expected "next year".

I hope that if an airfield for Kanha ever comes to be constructed, it will be outside the boundaries of the park and some distance away.

There is a pretty but sad legend linked with a small *tal* or lake near the Kanha *maidan*. This lake is known as Shrawan Tal. The story runs roughly as follows: Once upon a time there lived a king called Dasaratha. His kingdom extended over the whole of the subcontinent of India and he had his capital at Ayodhya (near Allahabad). He was very fond of hunting, and could shoot arrows at night merely on hearing a sound.

Once he was passing through the forest at night and heard a noise which he thought came from a wild elephant drinking water. He arrived at the source of the noise and shot an arrow. Presently he heard a moaning noise of a man there. He immediately went to the spot and found that a man called Shrawan was hit by his arrow, and dying.

Shrawan had come to the lake to fetch water for his blind parents whom he was taking on a pilgrimage, and the sound that King Dasaratha had heard was his pitcher filling with water.

King Dasaratha then carried the dead body of Shrawan to his parents and begged their pardon. But Shrawan was their only son, and when they heard of his death they too died on the spot.

The lake is called Shrawan Tal to this day.

Tigers

Apart from the Corbett National Park in Uttar Pradesh, KANHA must be one of the best places in India for seeing tigers.

The tiger is believed to have entered India from Northern Asia after the last ice age. It must have come through China, past the eastern end of the Himalayan range and into north-east India. It could not reach Ceylon, which was separated by sea. It has been recorded in all parts of India except the desert regions of the north-west and the higher Himalayas.

The present-day Manchurian or Ussuri tiger is a larger beast with a longer coat. It is to be presumed that the slightly smaller and thinner coated tiger of India is a modification evolved over the years due to the greater heat and moisture of its new habitat and possibly due to the fact that smaller prey has to be killed in India than in the pre-history days of northern Asia.

The term "Royal Bengal" which is sometimes added to the tiger is fanciful and not recognised by zoologists. There is only one sub-species in India, and the tigers found in Bengal are not necessarily larger or more handsome than those in Assam, Bihar or other parts of India. I don't know how the word "Royal" originated, unless it was from a tiger shot by the Duke of Windsor when he was Prince of Wales; but the word "Bengal" could have been rightly applied, as the type specimen, from which Linnaeus gave the name *Felis tigris* in 1758, came from Bengal. The tiger has since been renamed *Panthera tigris*, incidentally.

Tigers are usually solitary in habit, except at the time of courting and mating and except in the case of a tigress with large cubs. A tiger's "territory" is not a compact area of country but is generally in the form of a "beat" or sequence of places visited at regular intervals in search of prey. Should another tiger from outside venture on to such a "beat", there might be a fight — unless the weaker one gave way without a struggle.

There has been a lot of controversy about the tiger's power of scent. Some affirm that it has feeble powers of scent, while others quote instances to

prove the contrary. Probably the real truth is that its power of scent is good but that it does not use it or need to use it as a rule, for its powers of sight and hearing are so remarkable.

Tigers used to be very common in India, but improved and greater numbers of firearms, electric torches and spotlights of jeeps and so on have reduced their numbers to only a fraction of what they were. Also the fact that a tiger constitutes one of the best of all sporting trophies has contributed to its decline. I don't suppose there are more than about 4,000 tigers left in the whole of India today, contrasted with a possible 40,000 of fifty years ago. In some parts of India, such as Madras, they are becoming quite rare, though in a few other places they are still fairly abundant.

Due to the great decrease in the amount of natural food in the jungle, deer and pig, for instance, the few remaining tigers and leopards are often forced to come out and prey on domestic stock, thus becoming "cattle-lifters". Forest-dwelling tigers are leaner due to the more active life they lead, while cattle-raiding tigers become very bulky due to the easily found prey on which they are feeding.

Very rarely a tiger will either accidentally or purposely kill a man — but will not eat him. But once such a man-killer tastes human flesh, it may acquire a liking for it and become a man-eater.

Most man-eaters, however, become so due to some wound or other disability, or to old age, which makes the pursuing and killing of a wild animal, or even a domestic one, rather difficult. They evidently find killing a human being a very easy matter. The cubs of a man-eating tigress would naturally grow up to be man-eaters themselves due to the acquired habit and taste.

A man-eater is very rare — only about three or four in a thousand. You are quite safe in a forest and the normal tiger will not harm you — unless you accidentally intrude on a tigress with young cubs or a wounded animal, or possibly an animal fast asleep.

I remember once walking for a mile or more through some tall grass. What was presumably a cow was walking away just in front of me — I could hear it and could see the grass moving as the animal walked ahead. Eventually I came to an open place, and there was the "cow" — a huge tiger.

During my last stay at Kanha I was going out in the jeep one afternoon about 4 p.m. with the Range Officer when we met four men returning in an excited state. They had seen a tiger on a kill. We took them on board and went straight to the spot.

We left the jeep and walked about half a mile. Some vultures were in the trees — sure sign of a kill. Soon I, who was leading, caught a glimpse of a

tiger looking up angrily at being disturbed, and then making off along a fringe of tall grass into the forest. A dead bull gaur was lying there half eaten, probably killed the previous night.

No wonder we had failed to see any gaur that morning on our trip round the area. I felt sorry for the fine dead beast, but this is the law of the jungle, the rule of predator and prey, and there are usually surplus bulls in a herd of gaur.

It was now 4.30 p.m. with about two hours before it became completely dark. The driver of the jeep suggested that news be sent back to the Conservator of Forests who was at the Rest House, an idea with which I did not like to disagree.

So I decided on a plan of action. I would sit on the ground behind a diminutive bush some distance away from the kill, and the Range Officer could stay with me if he wished to. There was a good chance that, after the driver and the other four men had noisily departed and the jeep moved off, the tiger would return to the kill. Photography was out of the question, for the setting sun would be directly into the lens of my camera: it would have to be a case of "tiger watching" only.

I have occasionally sat *up* (in a tree) over a kill for a tiger in my younger days, and have experienced the unforgettable thrill when the magnificent creature arrives. Here was a chance to sit *down* near a kill, and experience the same thrills without the shooting.

I told the Range Officer of my plan, and asked him if he would like to stay with me. "Ye-e-s" came the reply from a man obviously a bit nervous about the shape of things to come.

Now I should here reiterate that a tiger, unless molested by man, is one of the safest and most gentlemanly creatures of the jungle. There is no fury on earth greater than that of a tigress with small cubs if she is disturbed in her hideout. A wounded tiger of either sex is positively dangerous at any time and in any place. A man-killer, or worse still a man-eater, is an uncanny and deadly peril and the news gets round quickly if one is at large.

A solitary wild buffalo or elephant can be unpredictably dangerous at any time. Even a rhino or a boar can be fearsome. But this looked like a straightforward case of a tiger or tigress at a kill. I have never been less afraid.

I selected a tiny bush about three feet high and got the Range Officer to sit behind it. I sat more in the open because I knew I could remain absolutely still. The bush would conceal the movements which I knew from experience my companion would make. The other men departed, and soon we heard the jeep start up and move off.

After a while, some of the vultures flapped down to the ground, near the kill.

The Range Officer looked longingly up at a tree nearby, up which we would have been very safe but very uncomfortable and in full view of the tiger. I beckoned to him to remain seated where he was. His continuous movements, fearfully glancing all round the place and wiping off the perspiration, made me think that perhaps the tiger would see him and not come out. Luckily the small bush hid his movements and nervousness. The sun started to sink, just above the kill.

A movement at the edge of the forest. Something was cautiously moving round, to get a clearer view of the place. Yes, it was the tiger: . . .

After staring straight at me for some time, it strode majestically across an intervening patch of open ground into the long grass near the kill. Then it, or rather she because it was a tigress, was joined by another slightly smaller tiger. It looked like a tigress and a nearly fully-grown cub. They came up to the kill. The mother started to drag it farther away, but stopped after a while. They both moved about — quite unaware of our presence.

Then they decided they were not so awfully hungry, and could wait. Had they not eaten more than half a gaur? And had they not come back quickly with the main object of driving away those impudent vultures? So they sat down in different places and cleaned themselves like huge domestic cats.

A grand sight indeed! And no shot fired, no ear-splitting report, no shattering of the silence of this peaceful scene, no wounded or killed animals. Nothing to disturb the natural spectacle of India's most magnificent predators going about their lawful business.

It was getting late, so we left our tiny bush, and the tigers quickly retreated into cover. The Conservator had come and we told him all about our experience. As it was soon to be dark we all returned to the Rest House.

I asked the Range Officer if he had been afraid during the episode, and he readily replied, "Yes, very much." "Why?" "Because I have not had such experience of tigers." Which goes to confirm that many people hold this mistaken notion that all tigers are dangerous.

But what a marvellous story he told the others later on in the evening! How brave we were, and how close we were — the seventy yards or so of safety between us and the tigers had somehow suddenly dwindled to seven! Anyway, it was good to know that he, like myself, thought the affair very much worthwhile.

I envied him his gifts of description and exaggeration. I myself suffer from the failing of dry factuality and lack of imagination. As I heard him retail the episode to his friends I was reminded of a story I once heard from a friend of mine: A group of village *shikaries* (sportsmen) were swapping yarns round a camp fire about tiger shooting. One old man, not to be outdone, enthralled the others by recounting how he had once fought a huge tiger and eventually killed it with a large knife. It measured eighteen

feet nine inches.

The others protested at this impossible measurement, and continued their protests. The teller of the story then magnanimously conceded that it all happened a very long time ago and that he *might* be mistaken. And that the tiger *might* have really been nine feet eighteen inches!

*

Also in the State of Madhya Pradesh but some distance away to the north-west, is the national park of SHIVPURI. This place, like several other parks and sanctuaries of India, used to be the game preserve of a ruling prince. When Independence came to India in 1947 and princely states became merged with the new States of the Indian Union, the protection given to Shivpuri by the former Maharajas of Gwalior suddenly ceased, and excessive poaching took place.

During this time most of the wild life, sambar, nilgai or blue bull (an antelope), chital, chinkara and others, were unfortunately killed off. When I first visited the place in May 1957 the wild life was starting to re-establish itself. The park superintendent told me how he had carefully driven the neighbouring forests with scores of beaters, to coax back scattered remnants of wild life into the new park area of some sixty-one square miles.

That he had been fairly successful in restoring the numbers of wild life was proved by the fact that each day I saw a few chinkara, those dainty and elegant chestnut-coloured gazelles, as well as chital, sambar and nilgai. Peafowl were everywhere, and a large variety of birds including paradise flycatchers. Once while we (about five of us) were standing in some open scrub country discussing various things, I noticed a purple sunbird hen fly up, hover and then proceed with building her nest *only a few feet away* from us (Pl. 18). I asked everyone to remain exactly where he was, and I slipped away to fetch my cameras. Result — several ciné and still pictures of this bird very close, building its nest.

The countryside and forests round Shivpuri are quite different from those of Kanha. The trees are mostly deciduous, and from March to June is "summer" and the place is all dried up — except the fine artificial lake, and one or two perennial streams. "Spring" comes with the monsoon in July, and autumn, as expected, in the closing months of the year. Parts of the forests are rocky and barren, but it is very good tiger country.

It was in this area that several record tigers are reported to have been shot. But I am personally always rather sceptical about measurements of tigers (and leopards), because there are many opportunities, for those who wish to, to enlarge these measurements. The correct way to measure the length of a dead animal is, of course, to lay it flat on the ground, drive a

peg in the ground at its nose and another at the tip of its tail, remove the animal and then measure the distance between the pegs (wooden, not whisky!). In some parts of India, I am told, they measure round the curves of the animal; and the more they press the tape into the softer parts, the greater will be the length of the tiger.

In the old days it used to be the custom that a very important person, say a Viceroy, must shoot a really large tiger. So when the V.I.P. was not looking (I give him the benefit of the doubt in this!) the organisers of the shoot would stretch the tiger as much as possible and push the tape as much as they could into all the soft and hollow places in order to produce a large tiger. I have been told by one famous sportsman that a special tape, with eleven inches to a foot, was used for Viceroys!

Not far from Shivpuri is a stone, recording the "record" tiger, shot by Lord Hardinge in 1916, measuring eleven feet six and a half inches. In 1924, slightly farther away, a tiger measuring eleven feet five and a half inches was shot by Lord Reading. I wonder. . . .

There is a sort of viewing lodge at Shivpuri, where the Maharaja and his guests could sit under cover and watch a tiger at a kill. A 1,000-candle-power electric arc lamp was hung overhead, with a special switch to regulate the light from five candle-power to full, so that photographs could be taken. After the tiger had made its kill, the light was gradually increased from 5 to 1000 candle-power in a time of ten to fifteen minutes, so that the tiger did not notice the oncoming "daylight".

I did not use this place myself. But I heard the story of a certain Forest Officer who had obtained permission to use it. A tigress killed at 3 a.m., and the light was gradually increased from 5 to 1000 candle-power. The tigress then withdrew, and later returned with four small cubs. They all started to feed.

Then a huge male tiger appeared, unexpectedly.

The tigress hastily led away her cubs, concealed them in the nearby jungle, and then returned to deal with the intruding tiger. As the tiger moved around the kill the tigress alternately placed herself between the tiger and her cubs, and between the tiger and the kill. She kept tactfully edging the tiger both away from the direction of her cubs and also from the kill. This went on for some time. The tiger, deciding that discretion was the better part of valour, withdrew — though it was evidently hungry.

Then the tigress returned to the nearby thicket and brought back her cubs to their dinner. A wonderful drama enacted just a few feet in front of the Forest Officer — but I did not hear if he got any photographs of it all.

The park superintendent of Shivpuri, Vijay Singh, seemed to me to be most knowledgeable about wild life, and genuinely interested in the subject. We had long and absorbing discussions. It was he who had arranged the tigers for Marshal Tito a short time previously, and he told me all about it.

If he is given a full month's notice, he can arrange for at least one tiger to be at a given spot at the exact time required, even in daytime. It is done by tying live buffalo "baits", at regular intervals which vary according to size of tiger and whether one or two tigers are coming.

I must now be careful not to get involved in the old controversy as to whether live "baits" should be allowed or not for tigers, lions and leopards. I myself do not approve of it, but neither do I strongly disapprove of it: I am inclined to accept it as a custom that has been going on for thousands of years. To some it may sound cruel — but I would remind such people that when the matter has been examined from every angle there are pros as well as cons, and a balanced view needs to be adopted. An anthropomorphic viewpoint that the tied-up animal must endure agonies of suspense and fear while it awaits its fate, unable to escape, is incorrect.

The arm-chair reader living in a city may perhaps be invited to reflect that a tiger has a right to live and that to do so it must kill some live animal about twice a week; that wild herbivorous animals in the forests have become scarce, so a tiger will come out and kill domestic stock anyway; that the tiger is a very selective creature, and will kill the healthier and younger animals and overlook the useless and aged if it has the chance to do so; that there is an alarming surplus of every kind of domestic stock in India, from buffaloes down to goats, which are consuming all the vegetation and doing their level best to turn the country into a desert as many parts of North Africa and the Middle East have become; that when live "baits" are required only useless young buffaloes are purchased from the owners, who naturally do not part with their more valuable animals; that the live "bait", when tied up, usually grazes or complacently chews the cud oblivious of the swift and skilful death it faces; that the alternative — a long walk along hot and dusty roads to a slaughterhouse where the killing may be delayed a day or two — would entail much more suffering to the animal.

I have mentioned all these points because if I had avoided the issue altogether I would have laid myself open to the criticism that I had shirked it!

The gratifying thing that I heard from Vijay Singh was that Marshal Tito declined the offer of shooting a tiger, but instead he commendably took ciné films of it. Or rather of them, because no less than four tigers turned up for him and his party to see all in one spot, and not one of these tigers was shot — except with cameras.

Although that great sportsman and naturalist Jim Corbett did not do very

much wild life photography himself, and although he did not travel much in other parts of India, yet in his *Man-Eaters of Kumaon* he comes down strongly on the side of the person who "shoots" with a camera rather than with a rifle.

He wrote: "... the taking of a good photograph gives far more pleasure to the sportsman than the acquisition of a trophy; and further, while the photograph is of interest to all lovers of wild life, the trophy is only of interest to the individual who acquired it".

I remember reading in a newspaper report that some time in the early forties Jim Corbett told the Viceroy, Lord Wavell, that the tiger in India might become extinct within ten years.

The tiger has not become extinct, though twenty years have elapsed since Jim Corbett's prediction. Thanks to its cunning and preference for thick habitat, it has been able to survive in India, though its numbers are becoming lower as each year passes by. I think that eventually, due to increasing human population, it will only be found in zoos, and in some of the larger national parks and sanctuaries — provided that State Governments can fully protect these fine wild places.

It must not be presumed from the foregoing that wild life conservationists in general, or I myself in particular, object to the shooting of tigers in India nowadays. Tigers can multiply quickly in certain localities, and a tigress rearing two or three cubs at regular intervals can produce a temporary local tiger population which, in an inhabited area, would have to be reduced by shooting.

Moreover *bona fide* sport, when the shooting rules are observed and necessary permits and licences obtained, is always encouraged by enlightened preservationists, for it brings in much needed revenue, and the presence of sportsmen in an area is invariably a deterrent against poachers. The out-and-out protectionist, who objects on principle to the killing of game animals and birds for sport, has no proper place in a progressive country, where surpluses should be harvested for revenue and wild animal populations kept within reasonable limits.

It was for this reason that I was surprised at the outcry in Britain because the Queen's party shot a tiger during the royal visit to India in the spring of 1961. An inquiry had been addressed to me several months previously from the Fauna Preservation Society in London, asking if it was ethically and conservationally all right for a tiger to be shot during this visit. I replied that the tiger is not a protected species in India, and that the shooting of a tiger by the royal party would be just the same as shooting a stag in Scotland, and that therefore it should not be frowned upon.

A V.I.P. guest in India is still traditionally offered a tiger shoot; and provided that tigers in any particular area have not become scarce, there is

no harm at all in this.

If sportsmen were not available for shooting tigers in places where they have become a menace, then professional killers would have to be employed to do the job — at great expense to the State.

On the other hand, the shooting of a cow rhinoceros in Nepal by a member of the same royal party was a tragic affair. For the rhinoceros is fully protected, even in Nepal, and this was a cow with a calf. In extenuation it should be admitted that the royal host in this case probably considered the rhino as "royal game", and the royal guests could only have declined the shoot at the risk of being thought discourteous.

Leopards

Although Kanha and Shivpuri are particularly good places in which to see tiger, there is no special home of the leopard in India. They are spread widely over the whole country and are found even in the drier and sparsely forested regions of the north-west. There are several sub-species or geographical variations of leopards in India and generally speaking lighter-coloured and smaller animals are found in the drier and more open parts of the country.

The snow leopard, a most beautiful creature, is found only in the higher Himalayas from Kashmir to Sikkim near the snow line, and is slightly smaller than the ordinary leopard but with a relatively longer tail. The clouded leopard, also a totally different species, has unusual cloud-shaped markings on its body and is very rarely seen or encountered because its habitats are mainly arboreal. But it is not uncommon in north India and I have come across it several times.

In the same way that tigers often leave the interiors and stay on the fringes of forests so as to be nearer to the domestic buffaloes and cattle on which they prey in the absence of wild game, so leopards usually leave the forests and lie up in patches of scrub jungle near villages. Leopards do this far more than tigers do because their food consists of smaller prey, and they find this in the villages — calves, goats, dogs, poultry and the like.

Perhaps it is for this reason that leopards have become more sophisticated and cunning than tigers. They are expert at concealment, and when they do emerge from their hiding places are extremely clever at evading any kind of risk of being killed by human beings. They are certainly more dangerous than tigers: in the olden days, before penicillin and other modern discoveries, more people died of blood poisoning after being mauled by leopards than after similar mishaps with tigers, because leopards have dirtier habits and secrete poisonous filth in the hollow grooves under the claws.

I have seen leopards in the daytime, always stealthiness and wicked

cunning personified, but one sees them more often at night when one is travelling along roads in a motor vehicle. Once during my early tea planting days a friend and I were coming home from a dinner party and saw three different leopards in the same night. The first one sat in the middle of the road facing us, and we had to scare it away. The second one had a freshly killed goat in its mouth, and my friend who was driving the car stopped, got out and approached the leopard which seemed slightly dazed by the headlights. He took the goat, which had by then been dropped by the big cat, and we returned it still warm to the astonished owner!

The third leopard we saw that night was in my bungalow compound when we returned. I had a young tame leopard, which was about the same size as my labrador dog and used to play with it. This leopard was chained up with a couple of lengths of dog chain to a box with a hinged lid, and it could go inside the box when it wanted to. At eleven o'clock that night we watched the full grown wild leopard stalk my young tame one, in defence of which we had to shoot.

Leopards sometimes lie up in a section of tea on a tea estate, and if the women who are plucking that section move in a line in one direction, the leopard will harmlessly slip out at the far end. But if two or more lines of women converge on the place where the leopard is hiding, it will feel itself cornered and will make an angry dash for safety at the last moment — mauling anyone within reach. I have had this happen on the estate of which I was manager, and after taking the injured person to my hospital I had the greatest difficulty in getting any work done at all during the ensuing week! Every section to be plucked had to be "beaten" by a line of men led by myself with my rifle before the women would enter!

Leopards very rarely become man-eaters, but when they do they are a very deadly menace indeed. I once knew of a leopard which became a terrible scourge in a district, regularly killing and eating young boys and girls of about six to ten years of age — till it was shot by a friend of mine. I myself once had to follow up in very thick jungle a leopard which had killed a man and dragged him away leaving a trail of blood in the rank, quick-growing undergrowth. This animal I eventually succeeded in shooting, but it was not a real man-eater. For some leopards occasionally kill and eat human beings simply because of their omnivorous habit, without acquiring a permanent preference for human flesh as man-eating tigers do.

It would take a really bold person to attempt to estimate the leopard population in India today. But I suppose they are slightly more numerous than tigers, say about 6,000 to 7,000 compared with ten times that number fifty years ago.

There have been some books on India in which hair-raising stories are told of sensational encounters between wild beasts. These accounts should

be treated with caution unless the author is well known. People who have spent only a short time in India can usually be regarded as suspect — unless they are naturalists.

Leopards and tigers have often figured in short sensational films, usually those made for TV in America and elsewhere. There must always, the makers of such films believe, be a charge or a fight. In particular I remember seeing a man meet and fight a leopard as part of the plot. This was an unequal fight, for the leopard, as I heard later, had had its claws extracted and its teeth filed down! Probably it was also doped. I have also known a person purchase and hire a tiger and a bear and put them to fight — for film making.

In another film I have seen an obviously unhappy and captive tiger chancing across a tame lion and starting a half-hearted fight! Well, this is quite impossible in the wild, because there are no wild tigers anywhere near the lions of the Gir Forest in India! In another film a tiger must have swum across several oceans to meet the boa constrictor it was filmed fighting with!

Of course a *genuine*, unstaged fight between the wild animals in the jungle would be a most rare and exciting thing to see. But most tragic. For it would most probably be between two males of the same species, say a tiger fighting another tiger, or a stag or a bull gaur in mortal combat with another of its own kind, often ending in the ultimate death of the vanquished.

There is now a commendable reaction in America against this kind of sensationalism. I remember the film librarian of the American Museum of Natural History in 1957 telling me that they would not accept anything sensational for their film library — even though it might be genuine — because it was apt to create a wrong impression about wild life on those who saw it.

Personally, and I think I speak for most lovers of nature, I can experience all the thrills I want by simply being in a beautiful forest, preferably all alone and just watching silently whatever wild birds and animals are there in the course of their daily activities in keeping alive.

The White Tigers of Rewa

I have always been fascinated by the subject of black and white freaks among tigers and leopards, and when I heard some years ago of a male white tiger being kept by the Maharaja of Rewa in Madhya Pradesh I longed for a chance to go and see it. And when I read in the papers early in 1959 that a litter of four white cubs had been born to a tigress mated with this white tiger, I could no longer resist the temptation of writing for permission to go and see this unique family of tigers.

First of all perhaps I should mention some of the better known reported cases of black tigers and white leopards and refer to black leopards (which are quite common) before continuing with white tigers.

I think I am right in stating that there has never been a really authenticated case of a black tiger. Various reports have been received, but on investigation they collapse to the ground. Certainly no skin of a black tiger has ever been produced as evidence.

There are several reasons why a normal tiger may appear black: one is that in the dry months, such as February and March, forest and grass-land fires occur, and tigers have a habit of rolling on the ground. Another is that mentioned in his book by Dunbar Brander, who describes how he watched a large tiger eating a kill and in the process getting covered with blood. He writes: "The red of the blood changed to black as it rapidly does, and had I not witnessed this transformation and come on the tiger without being aware of what had happened, I would have been firmly convinced that I had seen a black tiger."

The most famous of all reported "black" or "melanistic" tigers was the one described by a sportsman in 1889, and usually known as the "Chit-tagong Black Tiger." But he described the incident when an old man, forty-three years after it had occurred, and his four companions on this occasion do not seem to have done anything about describing the event. Apparently the skin was decomposed and could not be saved. Also it occurred in the month of March. So it cannot be accepted as authentic.

Black leopards are, of course, quite frequently met with in the wetter regions of India in the south and east, as well as in Burma and south-east Asia.

Now in some parts of India the word for "tiger" is *bagh*, though actually this word is used for almost any member of the cat family. In other words people will refer in the language to a "striped tiger", "spotted tiger" and so on down to the smaller cats. This explains how the "Dibrugarh Black Tiger" of 1936 came to be caught and described as jet black in colour and about twelve feet long and three and a half feet high. The dealer in Calcutta who purchased the animal must have had a shock when a seven-foot-long ordinary black leopard arrived. On this occasion R. I. Pocock, the eminent zoologist of London, remarked, "A ridiculous measurement (twelve feet) even for a tiger: the animal would require another pair of legs in the middle of its body, like a billiard table, to support its weight. . . ."

I have once seen a black leopard in the wild state, the very picture of deadly stealthiness and cunning. It was crawling forward on its belly, and at first I thought it was a large black snake. A very slight movement on my part and it disappeared in a flash.

It is well known that a black leopard appears jet black in a dull light. In bright sunlight the fully black spots can be distinguished from the very dark nearly-black background. A skin as a trophy will fade and the background becomes just dark brown.

Black leopards are, of course, the same species as the normal-coloured leopard, but with an excess of black pigment, a case of melanism which is the opposite of albinism. Black leopards mating with black invariably produce black cubs, but black mating with normal-coloured will produce both kinds of cubs. Two normal-coloured parents can produce a black throw-back, if there is black blood in their ancestry. I have twice seen both black and spotted cubs of a spotted mother (Pl. 24).

In 1947 I wrote an article (in *The Statesman* of Calcutta) in which I asked "Who has ever seen a white leopard?". A few years later a reference to this article appeared (in *The Field* of London) describing a leopard skin thus: "The colouring was not due to albinism but lacked melanistic characteristics, there being no black markings, and the colour being of various shades of orange and cream resembling that of a really good tortoiseshell cat." It had been shot in a princely state near Patna in Bihar.

Another very pale-coloured leopard (also reported in *The Field* in 1953) came to the London Zoo from West Persia in 1910 or 1911, with "indistinct, blackish spots in summer. When autumn came its now longer winter coat lost the spots and became so pale as to be difficult to see towards dusk."

Now for white tigers. There have been many authentic cases of light-coloured tigers, particularly in Assam, Bengal, Bihar and what used to be the princely state of Rewa. These have been of varying shades of off-white and cream background, with dark grey or chocolate-coloured stripes.

Only one case of true albino tigers has been recorded. This was in the old princely state of Cooch Behar in 1922, when two threequarter-grown cubs were shot. They had pink eyes.

All other cases have been partial albino, or light-coloured tigers. Sometimes such freaks are described as "red" tigers.

There is a tea estate in Assam called Bogabagh or "White Tiger" Tea Estate, because of two white tigers which occurred there at the beginning of the present century. In the case of the second one of these, the animal was killed and brought by a Naga to a tea planter late in the evening. The Naga was asked to wait till the following morning.

Next day, when the planter saw to his surprise that it was the second of the long-searched-for white ones, he could not conceal his astonishment. The Naga became very crestfallen at the sahib's surprise, and explained apologetically, "It is not my fault that the skin is white. The animal was like that when I shot it."

There is a superstition, at least in certain parts, that the shooting of a white tiger will bring bad luck, even death to the sportsman concerned. A very fine sportsman planter at a tea estate on the southern boundary of Kaziranga in Assam shot two light-coloured tigers, described by van Ingens, the taxidermists of Mysore, as "red tigers", about the year 1928. A year and a half later when the Brahmaputra was in flood, and he was helping to rescue some stranded villagers, he was drowned — in spite of the fact that he was the only expert swimmer of the party. His assistant, who was with him and could not swim, survived the incident and described the whole thing to me. The estate labourers afterwards said, "It is because he shot that white tiger that he lost his life."

But this planter had also shot a man-eater, and there is even a stronger superstition that if you have a hand in the destruction of a man-eating tiger, you will yourself be a victim. That is why it is so hard to get any help or even detailed information from the local people if there is a man-eater about.

The most famous of all the white tigers of India have been those of the old princely state of Rewa, now merged in Madhya Pradesh. In the diaries kept at the palace, are recorded no less than eight cases of white tigers there during the last fifty years.

In May 1951, another one, a nine-month-old white cub, was captured and kept by the Maharaja, and since then no more white ones have been reported in the forests of Rewa. It happened like this.

At a big shoot a tigress came out in a beat with four nine-month-old cubs. Of these cubs three were normal-coloured, and one was white — bigger and stronger than the others. The white one was not shot, and was captured later in a cage with water placed in it, for it was a dry place and at the dry time of the year.

This white male cub thrived in captivity, and a normal-coloured tigress, also caught in Rewa forests, was kept with it.

Now some people may ask "Why am I, who am supposed to be a field naturalist and a nature conservationist, not strongly opposed to a rare animal being captured and kept in captivity?" Well, the answer is simple: "What is the alternative, except complete extinction of some of the rarer forms of wild life?"

Some of the world's rare creatures have already been saved from extinction by being kept and bred in captivity — and later distributed to various places. Père David's deer, European bison, white-tailed gnu and Hawaiian goose spring to mind.

If this wild white tiger cub of the Rewa forests, possibly the last one of its kind, had not been captured, it would almost certainly have fallen a victim to some trigger-happy "sportsman" or poacher.

Now when this white cub grew up, it mated with the normal-coloured tigress, and three litters were produced one after the other. These cubs were all normal-coloured. So this tigress, which had failed to produce a single white cub, was "dismissed" and disposed of, and a female cub of her second litter was mated with its white father.

The resultant litter, born in October 1958, consisted of four white cubs, just like the father — ashy grey-brown stripes on a white background, pink paw pads and icy-blue eyes. Partial albinos.

The Maharaja very kindly invited me to Rewa and allowed me to take all the photographs I wanted to, and for this I was extremely grateful because very few persons have been allowed to do this.

The private secretary, Arimardan Singh, met me in the morning following my arrival at the guest house in April 1959, and we drove the twelve miles from Rewa to Govindgarh where the white tiger and his family lived in a huge, old, disused summer palace (Pl. 23). This place had not been lived in for fifteen years and turned out to be a large, rambling edifice, half fort and half palace, with innumerable rooms. I was told that in the old days 1,500 guests could be accommodated by the Maharaja here — without him being aware that anyone had come to stay!

I looked at the faded glory of the palace. Visions of former princely power and splendour flashed before me, of human drama enacted over the years. But the old order had changed. I wondered what the white tigers would look like.

I have seen pale-coloured tiger skins in museums and private collections, and was prepared to see some creamy-coated, brown-striped dull-looking creature of zoological interest only.

Then, looking down from the balcony into the far shady corner of an otherwise sunlit courtyard inside the palace, I saw crouching and glaring at me a huge ghostly-looking tiger, spectacularly white.

Was it real? This question was immediately answered by the tiger itself, which rose, strode nobly forward a few paces — and then charged down the courtyard in our direction emitting a deafening roar which reverberated through the desolate rooms and corridors of the old palace (Pl. 23).

It strode back to the far corner and glared at us again. Then the exciting demonstration was repeated. And again. Struck with admiration for the fine beast and filled with awe at surroundings of such historical significance and romance, I momentarily forgot the purpose for which I had come. But for the next two hours I was busy with my cameras.

We went along a passage and out on to another balcony, and there in the harem courtyard of former days I caught the memorable sight in bright sunshine of the normal-coloured tigress and her four cubs, one male and three female, now nearly six months old. What a contrast between the handsome, black-striped, rufous-orange mother and her four white cubs — exact replicas of their unique father!

They, too, looked ghostly, but their healthy activity and playfulness soon dispelled any doubts about their reality.

Four men looked after this family of tigers for the Maharaja, pumping water from the lake and feeding them on fifty-two pounds of goat meat daily. All this costs a lot of money, and the Maharaja has been considering how he can defray his expenses and how to arrange for the permanent maintenance of these white tigers for the benefit of India.

As soon as I could, I wrote to a professor who is probably the world's leading authority on genetics, and he kindly informed me that in such a case of a white tiger (a "recessive mutant") crossing with a normal-coloured daughter, one would expect equal numbers of white and normal-coloured cubs. Also that such a "run" of four white cubs was a one chance in sixteen, like getting four tails running on spinning a coin.

A subsequent litter born to the same parents in 1960 produced three cubs — two white male ones and a normal-coloured female one.

Later the same year one of the white female cubs of the first litter was purchased and taken to the National Zoological Park in Washington, a gift from an American broadcasting corporation to the President "for the children of the United States." This tigress is named Mohini.

In March 1962 a third litter was born at Govindgarh consisting of two white cubs — a male and a female. Ever since 1960 the Government of



5a. A male tiger in open grassland
b. Raja, the five-year-old white tiger from Rewa, in the Delhi Zoo



6a. An Indian lion in the Gir Forest
b. One of his mates with her three-months-old cubs

India has imposed a ban on the export from India of white tigers, and the Maharaja has felt even more the heavy burden of maintaining these tigers without being able to sell any of them abroad to defray his expenses.

For some time negotiations have been taking place for the Government of India to take over the maintenance of these white tigers. At one point the Maharaja, thinking that nothing would come of these negotiations, let it be known that he would return all the animals to the forests; and we were all very apprehensive about this, for if released into any forest these tigers, accustomed to an easy life, would quickly fall victims to wild tigers or to trigger-happy sportsmen. There is no sanctuary or park in India large enough to accommodate such animals with any degree of safety.

My own feeling has been that such rare and beautiful creatures should be a national concern. And that New Delhi Zoological Park would be an ideal place for at least one pair to be housed, while Govindgarh with its atmosphere of grandeur and romance could well continue to be the home of the white tiger family in the same way that some of the stately homes of Britain have been taken over by the National Trust.

Fortunately the matter was settled between the Maharaja and the Government of India early in 1963. Under the terms of the agreement the Maharaja was allowed to export the pair of white cubs born in 1962 to the Bristol Zoo. These cubs, named Champa and Chameli, came to London by air and reached Bristol in June, 1963. They are brother and sister, and in order to avoid too much inbreeding I believe that the Bristol Zoo authorities are purchasing one of the grown-up normal-coloured cubs of a previous litter for mating with one of the white cubs.

The two male white cubs born in 1960 have been sold to the West Bengal Government and are housed in the Calcutta Zoo, and have been named Niladri and Himadri.

All the other white tigers are now the property of the New Delhi Zoo, but Mohan the father and Sukeshi, one of the females of the first litter, are remaining at Govindgarh, together with Radha, the normal-coloured tigress and mother of all the white cubs. There is an arrangement by which some of the future litters will be shared by the Government of India and the Maharaja.

At the New Delhi Zoo are now to be seen Raja and Rani, the male and one of the females of the first litter, now five years old. I visited them in October, 1963, and was able to secure a photograph of Raja (Col. pl. 5).

Wild Asses on the Rann

North of Bombay, and very slightly to the west, are some remarkable wild places: the Great Rann of Kutch, the Little Rann of Kutch, and the famous Gir Forest with its lions.

First to the GREAT RANN, where countless numbers of flamingoes breed in the spring — provided that the amount of water from the previous year's monsoon and other conditions are favourable for their nesting.

I have never yet managed to go there, for the journey is long and arduous, and camping facilities and servants hard to come by. You have to go via Bhuj in Kutch, and you have to know what the news is about the flamingoes, whether they are nesting, and so on. This news is also hard to come by, for the place is not inhabited.

Then there are miles and miles to be done on pony or camel, over salt flats, often through a few inches of salt and water. Drinking water has to be carried, and tents and other equipment. In other words, it has to be a proper expedition organised with the help of the local authorities.

I was due to go there in March 1960 with Salim Ali, but was obliged to cancel it because of another commitment. Salim Ali has been to see the flamingoes several times, and has described them as a really wonderful sight with so many birds flooding the landscape with colour and beauty.

I have seen his ciné film of these flamingoes, which is very exciting. I liked especially the bit about the chicks being herded together with a few baby-sitter "nurse" birds, while the parents go off elsewhere to feed.

Close to the flamingoes in 1960 was a nesting colony, for the first time apparently, of rosy pelicans. The chicks of these rosy pelicans, strangely enough, are jet black, whereas the young of the spottedbilled pelicans which I saw in Andhra were snow-white.

*

Not far from the Great Rann of Kutch is the LITTLE RANN. This also is a salt waste, dead flat and about one thousand square miles in extent. During the

monsoon it is covered with a foot or two of water, partly by the local rivers and partly by water blown up from the sea by the strong south-west winds.

But in the dry months of November to June there is no water, and you can motor across the flats if you take care to avoid the darker patches which may be spongy. In some parts along the edge of the Little Rann there are salt workings: the saline water is drawn out of holes dug in the ground and run off into pans. After evaporation the salt is collected.

Scattered here and there in the Little Rann are small islands in the wet season, which are hillocks in the dry weather. On these are some grass and trees, similar to the scant, desert-like scrub vegetation on the mainland. On these islands, or *bets* as they are called, and on the shores of the mainland is found the Indian wild ass (Pl. 25).

Indian wild asses used to be common in north-west India, West Pakistan and south-east Persia. As far as I can ascertain, there is none now left in Persia, and only a very few stragglers in West Pakistan. Those of north-west India are now restricted to the Little Rann of Kutch.

Salim Ali went there in 1946 and brought back a lot of valuable information about the asses. He visited the Little Rann again in 1960 to select places for bird migration field studies, and found that some wild asses had died of a mysterious disease. At the end of 1961 there were reports that South African Horse Sickness had spread through that part of India.

In 1952 the Indian Board for Wild Life had put the Indian wild ass on the list of thirteen rare fauna¹ which should be given full protection. But I do not think that anything has ever been done about it.

So I wrote to London and Switzerland, to the Survival Service Commission of the International Union for the Conservation of Nature (known as I.U.C.N.), suggesting that I go there to find out the present position of the wild ass. Just about that time, winter of 1961-2, the World Wildlife Fund was launched and from this fund a small grant was made to cover my travelling expenses from Assam to Gujarat State.

The Chief Conservator of Forests of Gujarat, Hari Singh, promised me his fullest co-operation. And sure enough, as would be expected of Gujarat, I was met at my railhead destination and taken very good care of by the Divisional Forest Officer of Kutch and his Range Officer of Dhrangadhra — a place which I had difficulty in pronouncing.

Accordingly in February 1962 I spent a most interesting six days with R. K. Rathod and P. G. Joshipura, camping in three different places and finding out as much as I could about the wild asses.

These wild asses, I think, are the only true wild asses left in the world,

1 These were: Indian lion, snow leopard, clouded leopard, cheetah, rhinoceros, Indian wild ass, Kashmir stag, musk deer, brow-antlered deer, pygmy hog, great Indian bustard, pinkheaded duck and whitewinged wood duck.

except for the kiangs of Tibet about which little is known nowadays. The wild asses of Syria are most probably now extinct; and the "wild" asses of Egypt and other parts of north Africa are very probably feral ones, or domestic animals which have returned to a life in the wilds.

That is why so much importance should be attached to these wild asses of India. Especially as they are fine, handsome creatures of about twelve hands high (forty-eight inches), far bigger than the local domestic donkeys, which are only about nine and a quarter hands (thirty-seven inches). They never interbreed or even mix with the local domestic donkeys, which are believed to be descended from the Egyptian asses.

They are a bright sandy colour, with mane and dorsal stripe of dark chestnut. The lower parts are white, and the shoulders, saddle and sides of the rump are fawn-coloured. They are a good example of disruptive colouration. Their ears are short, like those of a zebra.

Previously they were estimated to be there "in their thousands", and "well able to take care of themselves". But in careful consultation with the two Forest Officers I made an estimate locality by locality, and the answer came to only 860, plus possibly another ten in West Pakistan.

I subsequently wrote to the Director of the Zoological Survey Department of Pakistan for information about these possible ten in West Pakistan, and he replied promptly and in detail. Apparently wild asses are extinct in almost all parts of that country, except for a few stragglers here and there.

A few asses cross over the international boundary of India and Pakistan at the eastern end of the Great Rann whenever they wish to, for grazing. But they "live and breed on the Indian side of the border because they feel safe and free from molestation there." Thus the wild asses, free from political, racial and religious inhibitions, roam hither and thither, sensibly helping themselves to the best that is obtainable from both sides!

Apparently a number of wild asses died in the Little Rann of *surra* in 1960, and I think some must have died of South African Horse Sickness in November and December 1961, for I heard reports of deaths and actually found a carcass. Their only enemies appear to be diseases contracted from domestic horses and donkeys. Wolves, their traditional foe, are now very rare, if not totally extinct, in those parts.

In fact these rather dreaded creatures, wolves, seem to be disappearing from most parts of India where they used to occur, even from the remoter parts of Uttar Pradesh where most of the reports of "wolf children" have emanated — reports of which there is one at the present time.

This is of Ramu in Lucknow's Balrampur Hospital. He was brought in 1953 when about nine years old, and was believed to be a "wolf child" because of his bodily condition and some of his habits which were said to be the same as of wolves, for instance his refusal to eat anything except raw

meat. In 1959 he had an attack of pleurisy which was said to have been diagnosed as "bovine pleurisy, an infection with animal tubercular bacilli," and was cured of it.

By 1962 the hospital's doctors were said to have almost given up the battle to "humanise" this boy, and that their only achievement had been to wean him from raw meat.

Personally I do not believe that a wolf could ever get a human child to its lair uninjured, and that even if a human child could somehow reach a she-wolf's den safely, the very short lactation period of a wolf would not be enough to sustain a child, and successive litters of baby wolves would interfere with its upbringing.

Having derived so much pleasure from the stories of Romulus and Remus, and of Kipling's Mowgli, it is with great reluctance that I am forced to the factual and unromantic conclusion that such "wolf children", which have been rescued from various places (Ramu was found near a railway platform), are nothing more than cases of mental immaturity, of idiot children abandoned by their parents.

The local people of the Little Rann do not molest the asses. These people are vegetarian, and have a high respect for the sanctity of life. So "orthodox" are they that when locusts came and devoured their crops they wanted only to drive them away, not to kill them. When wild asses raid their crops at night, which they do to a considerable extent, the villagers drive away the invading animals and never injure or kill them.

I spoke to the members of several village councils, and tried to do some publicity for wild life preservation. The inhabitants of the Gir Forest, I explained, adopt a tolerant attitude to the lions when their cattle are killed, because these lions are a valuable national asset. The villagers round Kaziranga Sanctuary in Assam patiently drive away the rhino which raid their rice fields.

The response was very gratifying and the village council members assured me that they never harmed the wild asses, and that they were proud to be the only custodians in the world of the rare Indian wild ass.

The asses raid crops at night when they get a chance, but in the day-time they graze on the scanty grass and other vegetation of the islands and shores of the Rann. They are very wary, and when disturbed by the approach of human beings they move away. Usually they take refuge by galloping off on to the flat Rann, where they are secure from enemies because of their speed.

In the olden days, horsemen used to chase them and spear or capture them occasionally. But one horseman could not do this alone: they had to chase in relays of fresh horses, and thus tire out the speedier wild asses. Nowadays we can follow them easily in a jeep.

I was told by a smiling informant that when some police came out in jeeps to drive away the asses from cultivations, the asses galloped out to the Rann followed by the jeeps. The asses were in front, and the police followed behind. But on the return journey, which took place almost immediately, the order was reversed and the police were in front and the asses followed behind!

When galloping, the asses do 32-34 miles per hour, and only slow down to 28 m.p.h. when tired. Most of my photographs were taken at 32-34 m.p.h. from a jeep, for I was not able to approach near enough to photograph them while they were grazing.

On the second day we came across several small herds of about ten to twenty asses, and a solitary one. I tried to photograph this solitary one by remaining hidden in a thorny thicket while the others of the party tried to drive the animal towards me. Several attempts ended in dismal failure, for the ass was much too clever to be coaxed in my direction.

Inevitably I had a feeling that it was I who was the "ass", and that the wild animal I was trying to capture on film was an alert and astute creature! Only by returning to the jeep and following the herds at 32-34 m.p.h. and photographing them at 1/1000 second shutter speed could I regain my self-respect!

In most parts of the Rann the shimmering warm air, rising up, created very interesting mirages. Often the shores of the mainland, and the islands, seemed to be floating low in the sky. Or else reflections were seen in what certainly looked like water. Even the asses were sometimes reflected in "water" at that time of the year, when the whole of the Rann was absolutely dry.

At the large village of Jhinjhuwada I met a Veterinary Assistant who was treating domestic cattle, horses, donkeys and other such animals for various ailments.

"Why don't you inoculate the wild asses against South African Horse Sickness?" I asked, pretending to be serious about it.

"Bring them to my dispensary, and I'll do them," he replied quickly, with equal facetiousness. I learnt quite a lot from him about the prevalence of disease in the district, and treatments thereof. The Veterinary Officer at Dhrangadhra was even more helpful with information the following day.

On the last day I set up my photographic "hide" in some tall grass at a place where a herd of wild asses were expected to come to drink, a small freshwater pond. I was hoping to get a chance of observing them at close quarters. But the herd was much too clever.

Once again a very strong conviction obsessed me that I, crouching uncomfortably in the "hide" in the heat of the day, was the "ass". The other asses stood on the nearby skyline, lookout sentinels on the alert, cool and

collected. Again only a run in the jeep on to the Rann, alongside galloping asses, could restore my self-respect. I think the asses quite enjoyed the gallop.

The Lions of the Gir Forest

The Indian lion is one of the rarest and most important of the wild animals of India, and yet it is one of the least known. It used to range over most of north India except in the easternmost parts, and as far south as the Narbada river.

It also used to be very common in India, for round about the middle of the last century a certain "sportsman" shot over 300 of them, fifty of which were in the neighbourhood of Delhi. No fewer than eighty lions were killed within three years by another "sportsman", a cavalry officer, who chased them on horse-back over open country.

By 1880 or 1884 there were no lions left in India, except in the Gir Forest of the old princely state of Junagadh. Lacking the cunning of the tiger and its preference for thick habitat, the lion fell an easy victim to sportsmen, especially when the latter became equipped with improved firearms. The lion is also partly diurnal in habit, while the tiger is almost entirely nocturnal.

There has been a lot of discussion about which of the two animals, the lion or the tiger, is the older inhabitant of India. As said before, the tiger is believed to have entered India from the north-east after the last ice age. Most naturalists now seem to believe that the lion is the older inhabitant.

Some people believe that the tiger was responsible, in some ways at least, for the "retreat" of the lions to its last stronghold in the Gir Forest. But this is not so. For the lion has disappeared from many parts of Asia where there were no tigers in existence.

Moreover in those areas where both the lion and tiger formerly existed together, they would probably not come into contact with each other, for they live in different types of habitat — different ecological niches. Lions prefer open, dry, scrub country, while the tigers live in thick tree or grass jungle.

Even if a tiger and a lion did meet in the old days in areas which they shared, it does not necessarily mean that there would have been a fight.



7. The birth of a river in the high Himalayas



8. The red panda is found in the Himalayas

They would in all probability have avoided each other.

Again, even if there had been fights between tigers and lions, it is wrong to suppose that the tigers would naturally win. The two animals are about the same size and strength.

No, it was just plain killing by human beings that made the numbers of the Indian lion decline to such a low figure. The same has happened in several parts of Africa.

There is an erroneous belief in some quarters that there is an admixture of African blood in the lions of India. I have done some research into this, and find that it is wrong. There are two reasons which may account for this mistaken belief.

Firstly, about the year 1890, when the Duke of Clarence (elder brother of King George V) came to shoot a lion in the Gir Forest, a rumour was started that the organisers of the shoot secretly brought some lions over from Africa so that the shoot would be a success. They were said to have been brought over in *dhow*s.

I have inquired from various sources, and can find no records or even legends of this ever having happened. And I feel confident that the rumour can be discounted because there was no real shortage of Indian lions at that time, and lions are easy to locate in the open, scrub forest of the Gir. Also, the voyage from East Africa to Junagadh by *dhow*s takes at least two months, and can only be done in the cold weather. And think of the large supply of meat "on the hoof" that would have to be brought to keep the lions alive during the sea voyage!

Moreover, any such "imported" lions would quickly be killed by the Gir lions, after such a long and emaciating journey. So there is probably no truth in the rumour of lions being brought from Africa.

What started this rumour was possibly the following extract from a book about this shoot for the Duke of Clarence in 1890: "At daybreak I had a visit from the Dewan (chief minister), who . . . came over to suggest that, rather than that the Prince should be allowed to leave the Gir without bagging a lion, two lions which had been sent out from Junagadh during the night, confined in cages or carts, should be set free in the jungles, and then be driven out to be shot. . . . Of course, neither Colonel Kennedy nor I would entertain the Dewan's suggestion for a moment. . . . So the matter was dropped, and the lions were sent back to their home in Junagadh. I have often wondered since how the latter would have acted had they been set free."

The second probable reason for the erroneous belief that there is an admixture of African blood in the Indian lions is the fact that the Maharaja of Gwalior imported three pairs of African lions about the year 1916. But these

were kept and later released as far away as Shivpuri in Gwalior, and were quickly shot out because of their lack of fear of human beings after a spell of captivity. None of these lions could have reached the Gir Forest.

There are slight differences in the skulls of African and Indian lions, and taxonomists have made them different sub-species the African one being *Panthera leo leo* and the Indian one *Panthera leo persica*.

Personally I have noticed the following external differences: Indian lions have larger tail tassels, more prominent elbow tufts and belly fringes, and fewer spots when young.

In July 1962 Mervyn Cowie, Director of the Royal National Parks of Kenya, and I met in America, and compared our photographs of African and Indian lions. We found that, in addition to the Indian lions having bigger elbow tufts and tail tassels, they were also stockier in build. Also Indian maned lions seemed to be longer in the head from ear to tip of nose, and to have less mane on the top of the head.

There is no doubt that the average African lion has a larger mane than its Indian cousin; but this is chiefly due, I think, to the differences in climate. All the African lions I have seen in Kenya and Tanganyika were on cool plateaux about 6,000 feet above sea level while the Gir Forest is only about 200 to 400 feet up, and it is very hot there except in the winter months.

A further explanation of why Indian lions have slightly smaller manes is that in the old days a few lions have always been selected to be shot by V.I.P.s. Obviously an invited guest would wish to shoot a lion of large size and with a really good mane. It was always the lions with the best manes that got shot, thus lowering the average standard of the stock.

Incidentally, I was told that for a really important V.I.P. in the olden days, there was a special method of measuring a shot lion: the front paws were pulled out as far as they would go, and then the measurement was started from the end of the paw, up the foreleg to the nose, and then round all the curves to the tip of the tail!

Another difference between African and Indian lions is that in Africa a certain percentage of adult male lions have no manes, whereas in India all adult males have manes.

Some people may ask, "What about the 'Maneless Lion of Gujarat'?" described by a certain naturalist. Well, this description was apparently written in 1833 and 1834 and the title was most unfortunate. He was describing a rather poor specimen of Indian lion, and also he actually explained that he was using the word "maneless" in a comparative sense only, to indicate his belief that Indian lions had much smaller manes than African lions.

As R. I. Pocock of the British Museum of Natural History has pointed out,

this writer's conception of African lions having very large manes may have been founded on menagerie specimens, which grow larger manes than those in the wild state, or on the full-maned lions of Cape Colony or Algeria which were at that time often exhibited in Europe.

Speaking from personal experience, I can confidently say that all the adult male lions I have seen in the Gir Forest during my three visits there carried good manes, only slightly smaller than those I have seen in East Africa.

Now for the numbers of Indian lions. From the year 1880 until 1900 or so, there were supposed to have been only about a dozen lions left in the Gir Forest. When Lord Curzon was due to go and shoot a lion at the beginning of the present century, he declined the offer when he heard that their population had sunk so low. Instead he urged the Nawab of Junagadh to give them stricter protection, thus earning the gratitude of India as he did in his efforts to preserve the country's archaeological treasures.

But the Jam Sahib of Nawanagar, whom I met at the Gir Forest in January 1956, told me that his family members had long been closely associated with the Gir lions and had always been going there to shoot a few of them. He said that he knew for certain that there were about 100 lions in existence at the turn of the century.

Apparently the Nawab of Junagadh used to let it be known publicly that there were "only a few" lions left, because every British Viceroy, Commander-in-Chief, Governor of Bombay, Indian Prince and others of less importance wanted to be invited to shoot a lion!

In 1950 a rough "census" was done by measuring and counting footprints, and it was estimated that there were 240 lions in the 500-square-mile Gir Forest. A similar "census" was done in 1955, and the estimate was given at 290. These "censuses" were organised and supervised by M. A. Wynter-Blyth, then Principal of the Rajkumar College at Rajkot, who has taken a keen interest in the wild life of what is now Gujarat State.

Wynter-Blyth was assisted by R. S. Dharmakumarsinhji. I always associate Dharmakumarsinhji with the western parts of India, as he is a most experienced naturalist and photographer of wild life. He is one of the very few people who have been able to photograph the great Indian bustard at its nest.

He has done a great deal for India's wild life, and has been the non-official Vice-Chairman of the Indian Board for Wild Life since 1952. Whenever we meet, we always discuss the wild animals and birds of India and other such subjects in which we are both deeply interested.

The next census was not carried out until 1963, by which time it was very

urgent, because it had often been reported that a number of lions had been poisoned on the fringes of the Forest, by disgruntled villagers whose cattle had been killed. Estimates of the number of lions so poisoned in recent years have varied from half a dozen to 100. So it was a great relief that the estimated number was "a little over 280".

It is to be hoped that the State Government of Gujarat will soon be able to constitute the Gir Forest as a sanctuary or national park, so that the noble lions, emblem of India, will have a better chance of surviving for the benefit of posterity.

*

It was mainly due to the rulers of the old princely state of Junagadh that Indian lions have survived in the Gir Forest. These princes, Mohammedans and known as Nawabs, were not conservation-minded, I think, because there was in those days no real consciousness in India about the need for conservation of wild life further than the need to preserve game for the benefit of sportsmen.

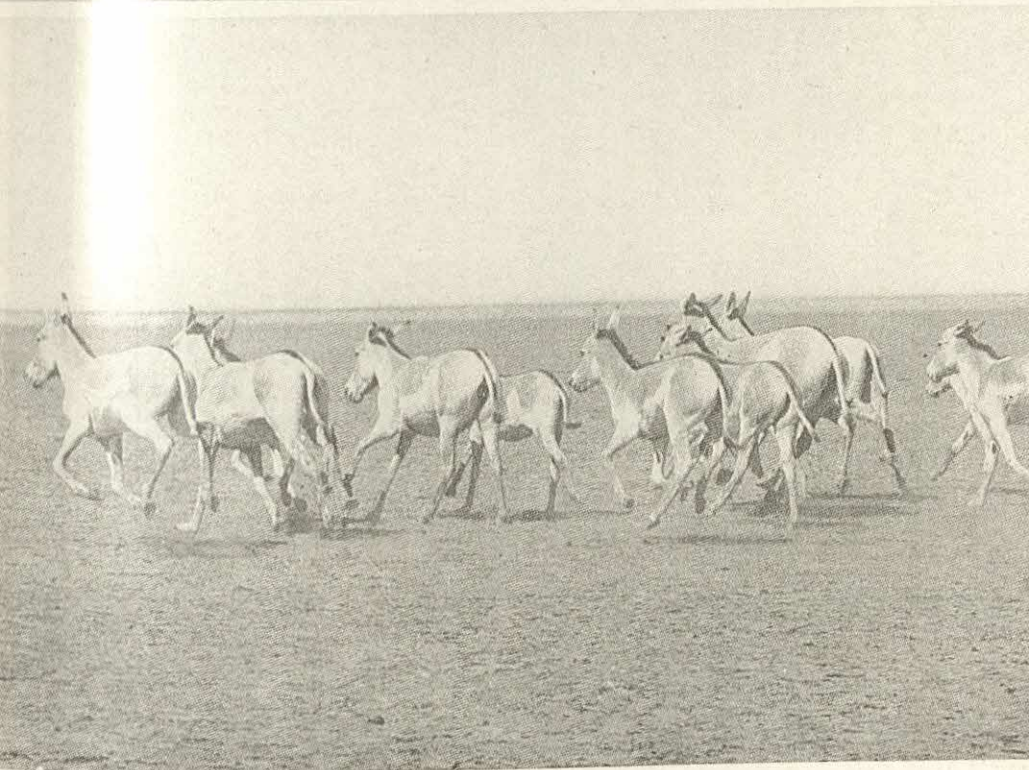
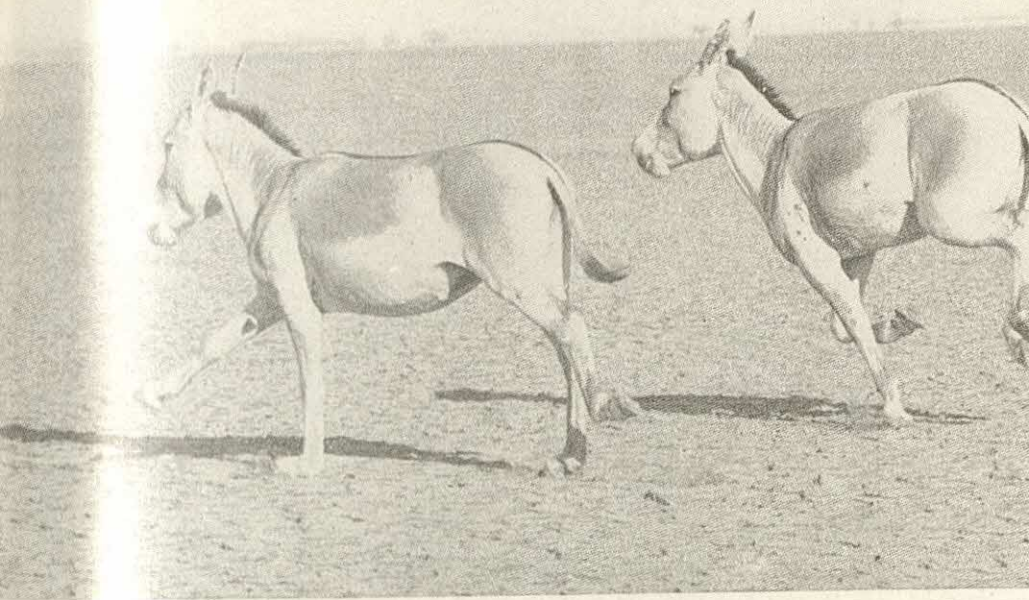
Lions in former Junagadh state were regarded as "royal game", just as were the Kashmir stag in Kashmir and the rhinoceros and tiger in Nepal.

The Nawab of Junagadh at the time of India's Independence, so I was told, might have acceded to India but was advised by his Dewan, who was a person from Sind in West Pakistan, to try to accede to Pakistan. When Junagadh, which is predominantly Hindu, was seen to be going to the Indian side, the Nawab fled to Karachi.

He was a great lover of dogs. I had previously heard that he took with him to Karachi all his dogs, numbering 700 to 800, and only half his wives, who numbered four. But an old retainer of his, who is now working at Sasan Gir, told me that, although the Nawab did once keep 700-800 dogs, at the time of Independence he had only 250-300 of them, and that he took only four dogs with him to Karachi, with three out of the four Begums. The other Begum followed the next day.

Even now in the Gir Forest there are some traces of old loyalties to the former princely régime. For instance many of the *shikaris*, who now work as forest guards or game watchers, still proudly wear the brass letters "JF" of the old "Junagadh Forests".

Incidentally this part of India, which is known as Saurashtra, is the "home" of princes: no less than 202 of them used to rule in this area. Whereas in Assam in the east of India there were no princes or princely states — only a very few zamindari (landowner) rajas.



25a. At full speed the asses can gallop at 34 miles per hour
(note the mirage in the distance)

b. There were three foals in this herd



26a. The head *shikari* (centre) of the Gir Forest and two colleagues
b. A *maldhari* with his herd of domestic buffaloes on which the lions prey

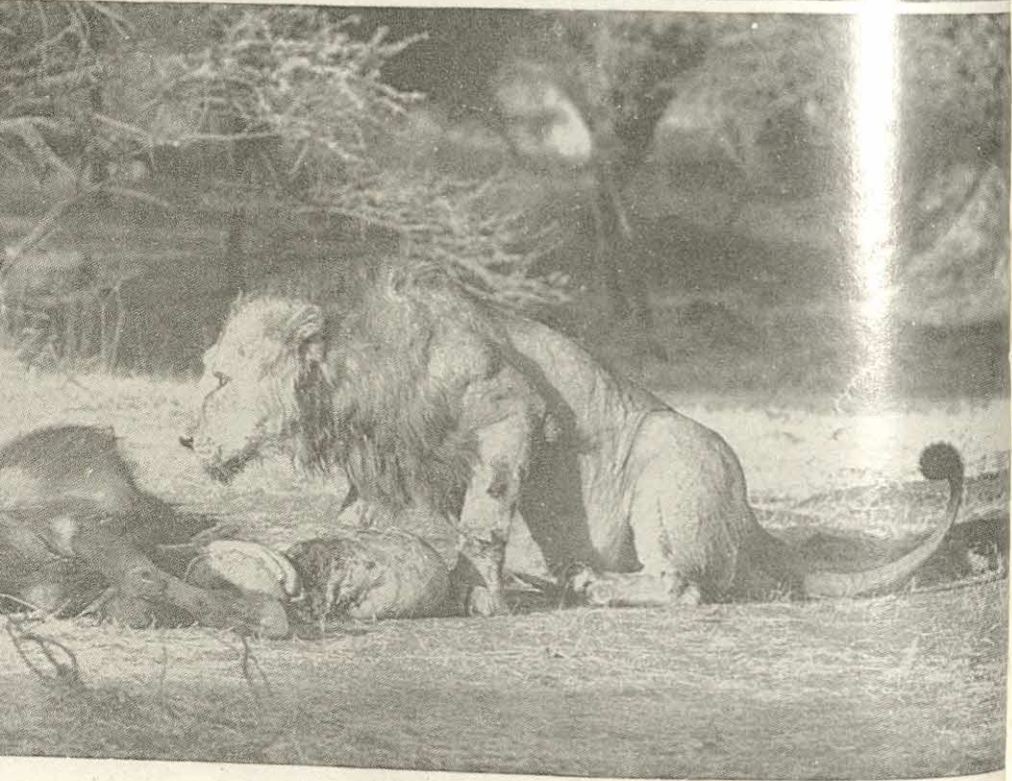
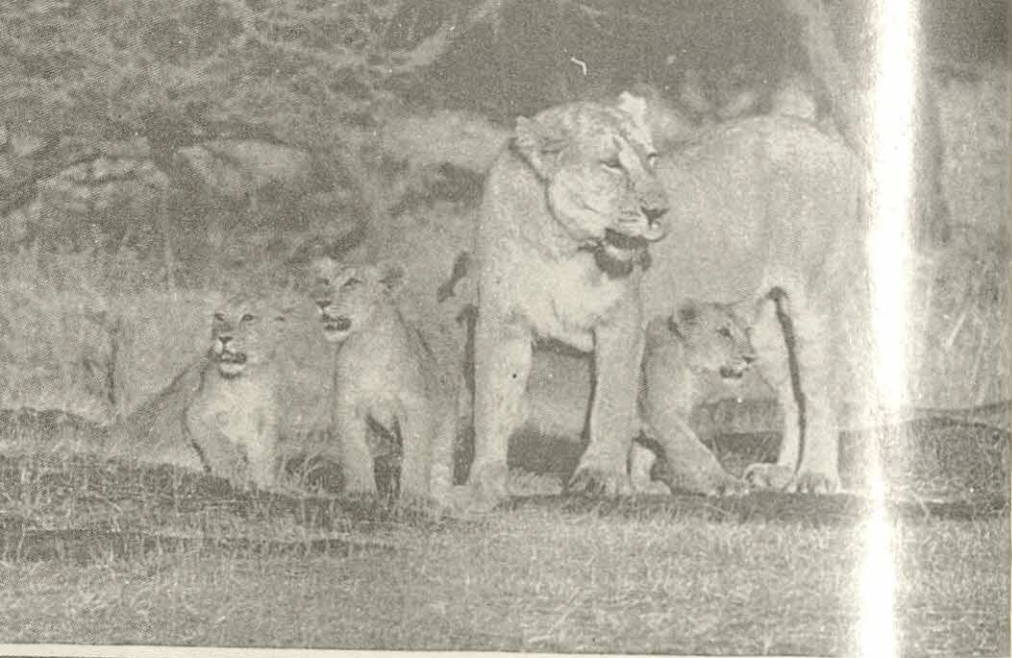


27. This large maned lion left the 'kill' for the more hungry lionesses and their cubs

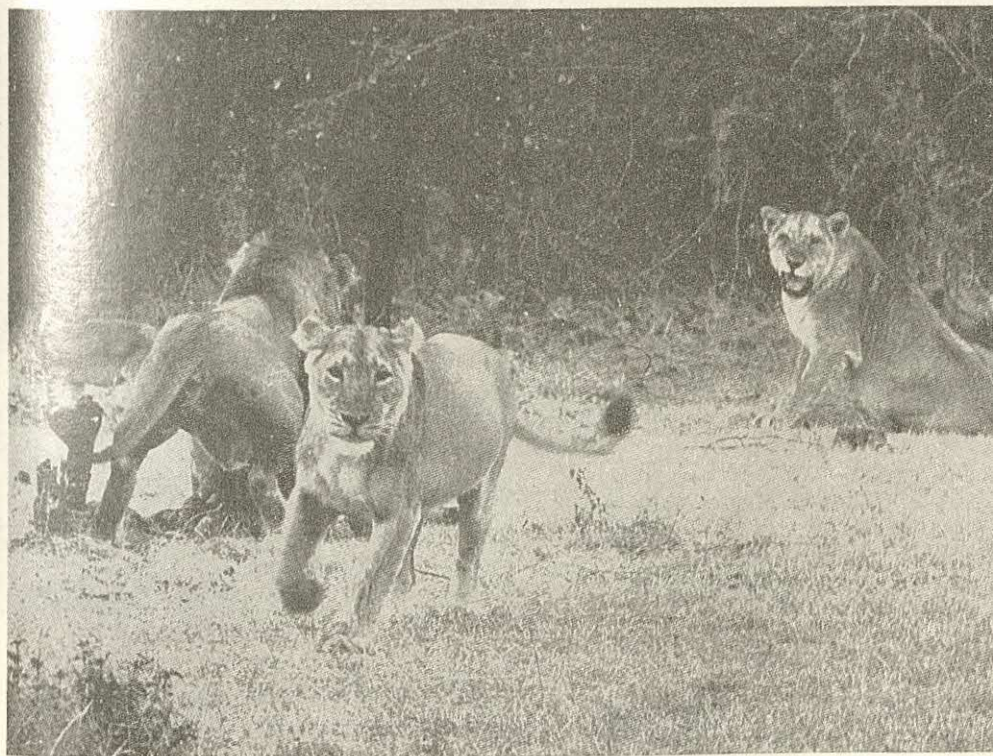
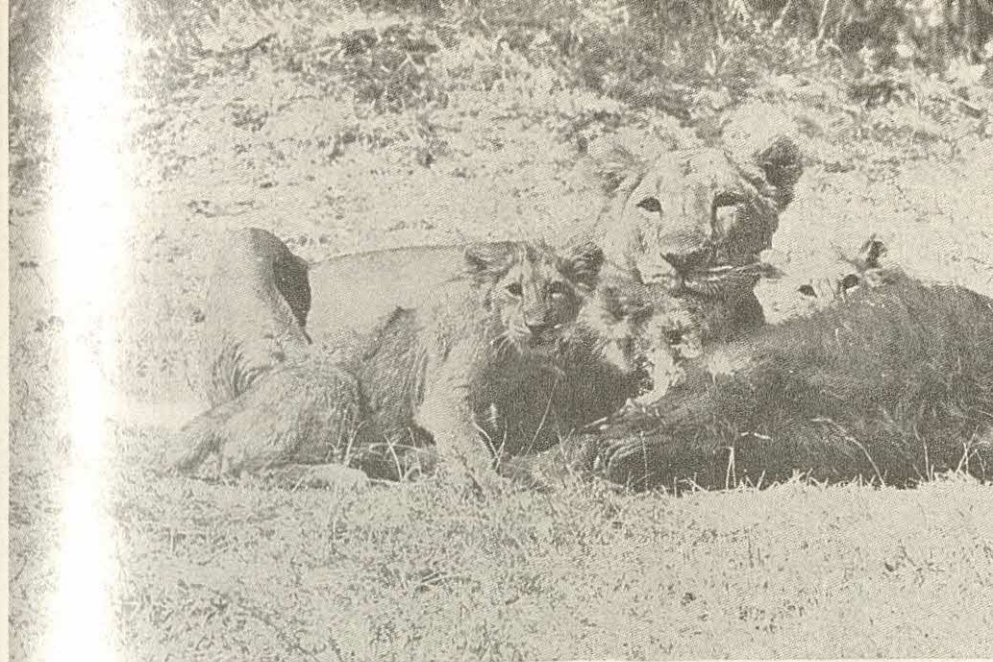




28 and 29. A lioness and four cubs await their turn at the 'kill' in the fading twilight



30a. One of the lionesses had three cubs
b. Though this buffalo was killed by one of the lionesses,
the lion ate his share later



- 31a. One of the lionesses and her cubs on the 'kill'
- b. "There was a terrifying snarl, and the lioness quickly withdrew..."



32. A view of the Himalayan foothills in the Corbett National Park. (A tiger has been known to sleep in this rest house in the off-season !)

The Gir Forest is a most fascinating and colourful place. It is not a forest as we think of this word. It is a vast 500-square-mile area of semi-arid country, with patches of thorn scrub very reminiscent of Africa, and with patches of stunted, poor quality timber forest containing a certain number of teak trees.

Here and there throughout the area are villages and cultivations, and enormous numbers of buffaloes, cattle, sheep and goats of the professional graziers locally known as *maldharies*.

When there are not enough nilgai (blue bull), sambar, chital, and wild pig (their favourite food) for the lions to feed on, they prey on the domestic stock of the villagers and *maldharies*. Fortunately these people are accustomed to losing a small percentage of their cattle, and fatalistically regard the lions as an "occupational hazard" to be endured as the price to be paid for the good grazing facilities of the area. Many of them now say that the Nawab used to pay compensation for domestic animals killed by the lions, but there are no office records of this. Probably he used to pay out money in certain cases, at his discretion.

My first visit to the Gir was in January 1956, when the thicker grass of the monsoon months had died to pale yellow, and been mostly eaten up. The wonderful scarlet blaze of the "flame of the forest" trees was at its best and multitudes of birds were feeding on the nectar of the flowers. The occasional distant roar of a lion could be heard. A truly romantic place.

It was the occasion of a wild life meeting, and there were about ten of us present. We were the guests of the then State of Saurashtra and its *Rajpramukh* (Governor), the Jam Sahib of Nawanagar.

The Jam Sahib is a widely travelled, well-read man, and an excellent raconteur. I listened most attentively to his talk about the Nawabs and their lions, and learned a very great deal from him.

One day at lunch, we were just starting on the office when a subordinate Forest Officer came in and whispered something to him. "Lions!" he said. Then "You come," he continued, looking at me. Then he asked two or three more to come.

"And no cameras!" he ordered sternly, fixing his eyes on me. There is a peculiar prejudice against cameras in this part of India, apparently.

What was I to do? My main interest in life was to secure some really characteristic pictures of India's wild life, and here was a chance to photograph the rare lions. And I had come all the way from the extreme east to the farthest west of India. The order "And no cameras!" had come from my host and the *Rajpramukh*.

After considerable thought, I decided to leave behind one of my cameras, and to take with me only two — a 35 mm. still camera with tele lens, and

my ciné camera.

When we all, about twelve of us, arrived at our destination in scrub forest, and proceeded on foot to a rough screen of tree branches, the Jam Sahib noticed me with cameras, exposure meter, tripod and so forth. He glared. But his glare seemed to relax into a smile of reluctant acquiescence!

Then we spent about an hour watching a pride of one large maned lion, one smaller lion and three lionesses on a kill. Unfortunately the lions were some distance away, too far for good photography. The Jam Sahib emphasised the potential danger of the lions, quoting one or two instances when villagers and others had been attacked by these beasts. A lion had attacked a man with a bullock cart not long ago, and a lioness with cubs had chased three men, clawing one of them.

I took about 200 feet of ciné film of this "lion show". And at dinner that night the Jam Sahib turned to me and said, "I want to ask you a favour. Can you please let me have a copy of the ciné film you took today of the lions?" So I knew that all was well, in spite of my having disobeyed his "order".

We were taken out each night after dinner, and shown lions in the headlights of the cars. But I disliked this form of entertainment. The lions stared uneasily at us, and no photography could be done.

On our last day I got a good close-up view of lions, and plenty of opportunity for pictures. I went out in the evening with M. D. Chaturvedi to see a lion kill. Some lions had killed two village bullocks, and the *shikaris* had erected a rough screen of branches for us to sit behind.

At this point I must introduce Chaturvedi more fully, for he is a remarkable personality. As the first Indian Inspector General of Forests, he had been the first person in India to introduce wild life conservation at an official, Governmental level. When he constituted the Indian Board of Wild Life in 1952, it was he who by his dynamic personality and keen interest in animal life was largely responsible for the enthusiasm engendered among representatives from all the States of the Indian Union.

Chaturvedi, like Colonel Burton, was the old-fashioned type of conservationist, who was also a very keen sportsman. As he himself said, "It is a paradoxical fact that it is often the sportsman, the killer of animals, that loves them most and does most for their preservation." He also had a dictum that "No Forest Officer was fit to take charge of a Forest Division until he had shot a tiger." This was all right, I remember remarking, in the old days when tigers were plentiful, for it implies that to shoot a tiger necessitates a knowledge of the forest and its inhabitants. But nowadays there are not enough tigers left in India for every D.F.O. to have shot one.

I think Chaturvedi, who had by then retired from service, would very

much have liked to shoot a lion. But he had to be content with a new camera and tele lens which he had recently acquired. We waited for some time behind the "blind", but no lions came out to the kill that evening. They were quite close, for we could hear them.

So we dragged the two dead bullocks a little closer to the "blind", and tied them with a stout rope to a *babul* tree. Then we went home for the night.

Next morning we returned to the site. The *shikaris* had swept the little track clear of the fallen, crisp teak leaves, so that we could approach the "blind" silently. Vultures were everywhere: some were circling quite low down in the sky, and others had settled on the trees. A few were on the ground at the kill.

We took up our positions behind the "blind" and for forty-five minutes watched six lions coming out to what remained of the two carcasses. For they had been eating all night, and not much was left for the vultures. They were a pride of two lionesses and four large cubs.

As they had been eating all night, they were not hungry. They simply did not like the idea of leaving the remains for the vultures. Again and again they came out, singly and in twos and in threes, to the remains of the kill, just to drive away the vultures. The strong rope we had used prevented them from dragging away the carcasses to thick jungle. I have seen the same thing in East Africa: a maned lion repeatedly returning to the half-eaten carcass of a giraffe, simply to drive away the vultures.

Two of the big cubs were males, and their manes were starting to grow. Again and again the lions came, saw off the vultures, and then returned to the shade of the forest. The vultures came down on to the kill when they had a chance, in the intervals between the visits of the lions.

Several times the lions heard the sound of my ciné camera, and stared in our direction. One of them once came quite close to investigate what the strange noise was. I was ciné-filming with "normal" lens, not tele lens, so close were they.

I did not feel at all afraid of these lions, because I knew that they had no reason to resent our presence there. But I must admit that I was a little apprehensive about the two *shikaris* who were sitting only just behind us — with their ancient guns loaded and ready "to protect us"!

After about three-quarters of an hour, the vultures disappeared. All was quiet. The lions had ceased to come, and I wondered why the vultures and crows had also gone away. The problem was soon answered.

An Indian jungle cat sneaked warily and nervously on to the kill. It knew that it was a lion's kill, hence its nervousness. But the vultures had all disappeared: they were more afraid of the small wild cat than they had been of the six lions!

"I feel as though I had shot a lion!" remarked Chaturvedi, significantly, glowing with exhilaration.

My second visit to the Gir Forest was in early November 1960. I was sponsored on this occasion by I.U.C.N., to try and find out how much truth there was in the rumours about the poisoning of lions by disgruntled villagers who had had their buffaloes and cattle killed.

The grass was still thick, as it was only a few weeks since the monsoon had ended, and visibility was therefore much less as far as the lions were concerned. I had hoped to find the grass still green, so that in colour photographs the golden-coloured lions would show up well against a green background. But even those few weeks of dry sunshine had turned the grass to the colour of straw.

On the first day I travelled about with the Forest Officer in a jeep and on foot, and caught glimpses of a pride of eleven or twelve lions, including cubs. On the second day another party had booked a "lion show" and I was invited to join, but only one lioness turned up in the late afternoon. On the third day, the *shikaris* again located the first day's pride of lions in a different place, and we brought along the remains of a buffalo kill and tied it to a thorn tree.

I took up my position on the ground, behind a cut branch of a *babul* tree with a little grass for partial concealment, about fifty feet away from the kill. At 11 a.m. and again at noon, a lioness came out and sniffed nervously at the kill. Each time she withdrew hurriedly. I thought she was shy because of cubs. So we covered up the kill to stop the vultures from devouring it, went back to the Rest House for lunch, and returned in the afternoon.

At 4.30 p.m. I again took up my position behind the small branch and grass, which were less than three feet high and only partially hid me. The Forest Officer and an armed *shikari* stayed with me. Two other *shikaris* had a goat whose bleatings were designed to attract the lions to the kill, a sort of live "dinner bell". The goat was not to be killed by the lions: as soon as the lions appeared, it was to be taken farther away, to entice the lions farther out.

Then, in the evening sunlight, a large maned lion walked out and sat down near the kill, facing me, only fifty feet away. He had evidently been asleep during the afternoon, for he now yawned six times at intervals of about a minute. I noticed his huge and powerful jaws and large sharp teeth.

Then he rose and strode majestically to the kill. First of all he tried to drag the dead buffalo away, but the rope held fast. Then he left it, and came straight towards me. I thought momentarily of those huge jaws and sharp teeth, and wondered if I would be the next victim.

The only thing that worried me was that the *shikari* loaded his old twelve-

bore gun, and I could not decide whether a shot from him would deter an attacking lion, or merely act as a stimulant to it.

But a questioning glance from me was answered by the Forest Officer who signalled back that all was well. Apparently he knew his lions as well as we know our rhino in Assam, individually and often even by name,

At that moment five large cubs appeared just in front of me, about thirty feet away, looking round them with curiosity and keen anticipation of a feed. As the lion passed the cubs, he sniffed affectionately at one of them, and then came as close as ten feet from me. He passed me, and sat down in the shade of the same tree under which I was sitting, about twenty feet away. We could hear him breathing quite clearly.

In no time at all a large lioness was on the kill, eating ravenously. Two more lionesses and two more large cubs turned up, farther away to the left, but I did not see them till later. The seven cubs belonged to two of the lionesses, probably four to one and three to the other, while the third lioness was about to have cubs. The maned lion would be the father of all the cubs.

Eleven lions all round me! I kept on photographing them as best as I could in the fading, mellow sunlight. From the distance came the roaring of two more lions.

One of the cubs ventured too close to the kill, and the hungry lioness struck at it in a flash and knocked it over, with a single stroke of her mighty forepaw.

The lions could see me and my two companions all the time, as the camouflage behind which I was sitting was only knee high. One of my cameras made rather a loud click, and each time it was used the lions looked sharply in my direction — until they got used to it.

The fact that I was on the ground and comparatively unprotected made this "lion show" an adventurous and intimate one, and I could not help feeling that, as I had not molested or interfered with the lions in any way, they "accepted" me as harmless although human. The lions I have seen and photographed from the safety of a motor vehicle in the national parks of Africa seemed less exciting.

The last picture I took in the fading twilight was of a lioness and four cubs, all sitting in the grass and waiting for their turn at the kill. They all looked intently, almost friendly, at me with their handsome cat-like expressions (Pl. 28-29). (Incidentally, when I afterwards showed this photograph to the van Ingens, taxidermists, at Mysore, one of the brothers remarked, "Obviously E. P. Gee had been to van Ingens and borrowed five stuffed and mounted lions, and placed them in the grass!")

Then I said I had taken enough pictures. The two *shikaris* who had taken away the goat and who had been waiting some distance away, came up

and joined us.

"The male lion came within ten feet of you, *sahib*," they said proudly.

My third visit to the Gir Forest was in February 1962, on my return from seeing the wild asses. At this time of the year the grass has mostly disappeared, making better visibility for seeing and photographing lions.

The Divisional Forest Officer of Gir Division, B. K. Jhala, accompanied me this time. He came out from Junagadh, which is his headquarters, and stayed at the Sasan Gir Rest House with me for a few days. Jhala is fairly young, but experienced and interested in wild life. So we had long and pleasant discussions about the Gir Forest and the possibilities of making it into a sanctuary or national park, in spite of the villages, cultivations, public roads, and so on.

When I go on such expeditions, I usually take with me some of my photographs of wild life, especially ones I have taken on a former visit to the same place, for showing to the local Forest Officers and others. This time I had with me the photos I had taken on my 1960 visit to the Gir.

On that occasion one of the *shikaris* had grumbled at my being so particular about having everything just right for photography, any protruding branch to be cut and so on. The same prejudice against cameras used to be found in peasant as with prince. But this time, when I showed the 1960 photographs, all the *shikaris* were delighted and said they now fully understood the needs of photographers.

The very afternoon we arrived there, I was treated to a spectacular "lion show". First of all, out came a lioness to the kill. Then she was joined by her three young three-month-old cubs (Pl. 30). Later a large lion (Pl. 30) came to feed, while the lioness and her cubs returned to the jungle. Another lioness was there and was "in season", and later on we saw the lion mating with her. Yet another lioness with her two young cubs was close by, but did not appear at the kill.

Next day I spent a morning in touring round the area with Jhala. We saw nilgai, chital and pig, and I think these have increased in numbers since my first visit in 1956. Which is a very good thing, because after the Nawab left in 1947 there was wholesale killing of wild life, and such herbivorous animals had become scarce, meaning that there was less natural food for the lions.

In the afternoon I went on foot with three *shikaris* to look for the lions of the previous day. The male lion and the lioness "in season" had gone away, but the two lionesses were there, with their five cubs. I spent two hours with them, and a goat with its bleatings kept the lionesses interested. I went as close as twenty feet, on foot.

The lionesses were not dangerous — unless I happened to get between

them and their cubs. This I never did intentionally, but sometimes the cubs wandered off on their own, and got the other side of me. In such cases I had to be very careful and move to another place so as not to be between mother and young ones.

On the third day, the *shikaris* told me they had located the same maned lion, and also the lioness with three cubs, in different places. Which did I want to see? I decided on the cubs, because babies of animals and birds always have such universal appeal, and I am no exception to this weakness. Jhala was busy with the Election, so I went with two *shikaris* and a Range Officer. After leaving the jeep, we pushed through some thorn scrub and then found not one but both lionesses with their five cubs. The two cubs of the second lioness were nearly as big as the other cubs, two-and-a-half months old.

It was now eleven o'clock, and out in the open the sun was fairly hot. The lionesses and their cubs had stopped feeding on the buffalo kill, and were resting in the shade near by. I also took up my position under a *babul* tree, with a scraggy thorny branch in front of me, about forty feet from the kill, while the others stayed some distance away. The cubs were playing.

"Let us go back to the Rest House for lunch," said the Range Officer, who had come up to me. It was now one o'clock. Two hungry *shikaris* were standing up, also ready to go home for their midday meal.

"This is my lunch," I replied, pointing to the lions, "I want to stay here all day."

And I did. Without ever thinking of food and drink, I remained there till darkness fell. The Range Officer brought me a flask of tea and some biscuits when he returned in the evening. What I saw of the lions was feast enough for me.

The lionesses both returned to the kill, separately, for a short feed during the afternoon. The five cubs, three of one lioness and two of the other, were all mixed up as they played about and ate the kill. But when they suckled, of course, they went to their own respective mothers.

Sometimes the cubs wandered in my direction, and one of them came within a few feet. But fortunately it did not go the other side of me and thus put me in danger. One of the lionesses was asleep only about twenty feet away. The *shikari*, who had stayed behind with me, had also gone to sleep! Only I and the cubs were awake!

I had plenty of time to observe the big cats carefully. The three cubs of one of the lionesses all had different characters: one was usually near its mother, another was more venturesome, while the third often played on its own with a bit of stick. I was reminded of the famous African lioness Elsa and her three totally different cubs, so well described in Joy Adamson's book.

I also noticed the reassuring "m—hm" of the mother, which meant that the cubs could come out and up to her. And the low guttural growl which meant danger and at which the cubs would remain still, wherever they were. Later on I asked the *shikaris* what were the various communication sounds made by the lions, and they were able to imitate them perfectly. They could also produce accurately the noises made by buffaloes and goats, in order to attract the lions.

At about three o'clock there were "squawks" from the crows, which had collected with the vultures in the trees. The sleeping lionesses awoke, and the cubs froze in various places at warning growls from their mothers.

And then the third lioness, the bad-tempered one which was "in season", stalked warily and hungrily on to the scene and up to the kill. The two lionesses and their cubs watched her feeding. She looked menacing and dangerous. The *shikari*, who had woken up, wanted me to withdraw farther away.

As this bad-tempered lioness was eating the kill, one of the cubs came up to her. There was an angry snarl and the feeding lioness rushed at it and bit it savagely, leaving it lying on the ground writhing in pain. The cub's mother stood up in alarm, but did nothing. The cub then rose and limped back to its mother.

Shortly afterwards another cub ventured too close to the kill. This time there was a real commotion, and the cub got severely bitten. Both the other lionesses rushed out to defend the unfortunate youngster. The *shikari*, anticipating a fight among the lionesses, succeeded in persuading me to withdraw about fifteen feet farther back.

The bad-tempered lioness continued feeding, angrily growling from time to time. It was now late in the afternoon and the shadows from the *babul* trees were slowly lengthening. Fortunately I had worked out things so that I was in the right direction for photography, and the kill and the lioness were bathed in the mellow light of the setting sun.

The five cubs had regrouped themselves with their respective mothers, and both families sat watching the bad-tempered lioness, which was still feeding. The vultures and crows were waiting patiently in their trees, hopeful of something being left for them eventually. The sun disappeared behind the distant hill, leaving a cool and tranquil twilight.

The *shikari* nudged my shoulder. And there from the right, was the maned lion striding slowly and majestically on to the scene.

Apparently the lion had located the kill from some distance by the circling and settling of the vultures. The bad-tempered lioness had also done this. Now the whole pride were together again.

The lion sat down, looking at the kill. But only for a minute. Hunger evidently got the better of him, and he was not afraid of the bad-tempered

lioness. He walked quickly to the kill and wrested it from the lioness.

There was a terrifying snarl, and the lioness quickly withdrew, straight in the direction of where I was crouching with my camera (Pl. 31). The lion had seized the remains of the dead buffalo. One of the other lionesses was sitting with her cubs in the background, mouth open, looking very, very pleased that father had come and brought the bad-tempered one to order.

I took two photographs with fast black-and-white film, one of the lionesses coming angrily straight towards me, and another going off to the right. She then sat down, not far away from me.

Just before I came away, when it was nearly dark, I saw a lovely sight: father sitting down beside the kill and all five cubs enjoying themselves, eating happily. The three lionesses were sitting in a semi-circle, a few feet away.

After Jim Corbett

At the inaugural session of the Indian Board for Wild Life held at Mysore in 1952, we recommended that a new home for some Indian lions be found somewhere in north India, so that all our eggs would not be in one basket. We realised that if some disease or other calamity occurred in the west of India we might lose the whole species.

This new home would have to be within the former range of the lions. Ecological conditions would also have to be suitable, for the topography of India is changing, with the cutting and clearing of so much forest for cultivation, and the climate is gradually altering too.

The Uttar Pradesh Government therefore offered to create a sanctuary called CHANDRAPRABHA, which means "radiance of the moon". This sanctuary is forty-three miles from Vanarasi (old Benares). Accordingly a lion and two lionesses from the Gir Forest were released there in December 1957. The older lioness soon gave birth to a cub, but this cub was shot by poachers about June 1958.

The younger lioness had two cubs in 1960, but subsequently crossed over into Bihar with both of them. She returned to U.P. later, but with only one cub. This cub was found dead in 1962: the cause of death was not known, and was being inquired into.

The older lioness gave birth to one cub in January 1962, and the younger lioness had two cubs in February 1962. Thus at the time of the latest information from U.P. (in May 1963) the strength of the lions here was seven, and was expected to increase to eleven in 1964.

It is too early to give an opinion as to whether this experiment is going to be a success or not. I believe that there are no tigers in the area to compete with the lions, and that wild dogs only rarely cross into Varanasi Forest Division from neighbouring Bihar. In addition to wild herbivorous animals for the lions to prey on, there are vast herds of domestic stock all over the place — even inside the sanctuary.

Great credit is due to the U.P. Government for undertaking this interesting experiment. I wish them all success in the venture.

*

In the extreme north of this State are the RAJAJI and KANSRAU sanctuaries. I have visited both of these, and liked them very much. But most unfortunately the Rajaji Sanctuary, which contains some of the finest wild life forest of India and which used to be the shooting blocks specially reserved for the Viceroys, had been invaded by *gujars* and their cattle when I was there.

These *gujars* are nomadic herdsmen, who take their animals into mountain pastures during the monsoon months, and bring them down into the foothills and plains in the cold weather. It is a pity that they should be allowed to graze their cattle inside reserved forests, and still more so inside wild life sanctuaries.

*

A little to the south-west of the Rajaji Sanctuary, in the foothills of the Himalayas, is the famous CORBETT NATIONAL PARK, which is particularly valuable as a stronghold of the tiger. It was India's first national park when it was created in 1935 and was originally called the Hailey National Park after Sir Malcolm Hailey, as he then was, Governor of U.P.

I visited this beautiful place for eight days in April 1954. I had always wanted to go there, for this was the part of India where F. W. Champion did his wild life photography and where Jim Corbett sprang to fame as a naturalist and killer of man-eating tigers and leopards.

F. W. Champion published two wonderful books: *With a Camera in Tiger-Land* in 1927 and *The Jungle in Sunlight and Shadow* shortly afterwards. These books are full of his photographs of wild animals and though many of them were taken by the animals themselves (by flashlight) yet a lot of the pictures were daylight records of wild creatures and their environment.

As such, Champion must be regarded as the real pioneer of wild life "shooting" with a camera in India. Certainly he and his books made a profound impression on me at the time.

I was very pleased to have had the chance of meeting him on a boat returning from home leave in 1938. We talked about India and her wild life, and he said he envied me for living in Assam, where there are interesting wild animals which do not exist in U.P., such as rhino and wild buffalo.

Champion left India on retirement from the Forest Service in 1947 and went to northern Tanganyika for a job in the forests of that Protectorate. He wrote to me in one letter: "Animal photography here is too easy. Most of the animals live in the open plains and can often easily be approached and

photographed from a motor car in the numerous National Parks and Sanctuaries . . . I have got tired of photographing lions, which completely ignore motor cars, and I sigh for my friends the tigers of India, which can at no time be photographed easily. . . ."

In later letters also he expressed his nostalgia for the "Indian way of life", and the country where he and his wife had been so happy. And so must many of the old *koi hais*, who spent the best years of their life here, and who now have only the cold and bitter climate of Britain, their bedroom slippers and home firesides to console them, long to relive their arduous but exciting years in India.

That is why I consider myself so fortunate in being able to stay on in India after retirement and to devote my time to what little wild life is now left.

It was Jim Corbett and a society of U.P. (then the United Provinces) who originated the effort to preserve India's wild life in the early thirties. I corresponded with him and contributed to *Indian Wild Life*, a magazine which was published then.

Unfortunately this movement and the magazine did not flourish, and by the time the second world war came both had suffered the very same fate from which they were trying to preserve the rare animals — extinction.

During the war years of 1939-45, many forests of India were over-exploited to supply timber for the war effort, and the military with their newly-invented jeeps and automatic weapons did considerable damage to wild life. In addition "normal" poaching continued unabated throughout India.

The Hailey National Park, however, remained more or less intact, in spite of poachers. But when I was there I was told by a senior Forest Officer that almost every contractor's lorry inside the Park carried a gun. Nevertheless forest operations such as timber extraction are inevitable, since the State Government cannot do without the valuable timber and the revenue derived from it.

Like so many of the beautiful wild places of India, this Park is difficult to get at. There are several changes at railway stations before reaching the railheads of Kotdwara in the west or Ramnagar in the east. Thence there is a drive by road of some thirty miles through rugged country across *nulla* beds — in the dry season only.

In the wet season from June to November it is not possible to go there at all. During these months no one remains there, not even a forest guard or a *chowkidar*. For the place is completely cut off from the rest of the world by lack of bridges over the numerous streams.

The beauty of the place captivated me. Through the northern part of the Park flows the Ramganga river, crystal clear in the cold months, and

bordered by *shisham* trees of vivid light green. I saw many *mahseer* (sometimes called "the Indian salmon") and "Indian trout" in the shallower pools, while in the deeper ones of the upper and lower gorges you can see large *mahseer* and *goonch* (known as "the fresh-water shark") basking in their watery hide-outs as you peer down from the tops of rocky precipices. Tortoises of varying sizes lay in the sun, or else swam about in the water.

Both kinds of crocodile could also be seen here in 1954, the long-snouted, fish-eating *gharial* and the short-snouted *mugger*. I wonder if the crocs are still there, for they are becoming very rare all over India and recently have had to be put on the list of protected species.

Where the valley of the Ramganga broadens out is the famous Patli Dun, a *dun* being the local term for a flat valley in the foothills of the Himalayas.

The Patli Dun, about 1,250 feet above sea level, is a grassy area and home of chital and hog deer, with a few swamp deer. Here and there are isolated clumps of trees which add to the beauty of the scene: pink *bauhinias* in full bloom, the budding *kusum* trees with young leaves of bright pale mahogany, and the "flame of the forest".

And everywhere *sal* trees. These were changing their leaves — a brilliant blaze of yellow and gold, with touches of pale green. The whole scene was a mingling of the beauties of autumn and spring so often found in India.

Just below Boksar, where the river leaves the *dun* and begins to plunge through the lower gorge, is a cliff with a cave and a pool below. Here at Sagar Tal, so the legend says, the gods descend annually to take their bath; and every year in January this remote place is thronged with some five or six hundred pilgrims who journey to bathe at this sacred place on the auspicious day of Makar Sankranti.

Almost every day I saw sambar, chital, barking deer, pig, common langur, rhesus monkey, peafowl and red jungle-fowl. A few tracks, about a week old, were seen of wild elephants, but these had apparently moved elsewhere.

I noticed jackals near the Rest House. They are usually found near human habitation, and are useful scavengers. They also prey on those living creatures which are easy to kill, such as poultry and the sickly young of deer. Incidentally, their warning note of the presence of a tiger or leopard is described as "*pheow*"; and this jungle noise has given rise to the fanciful fable that the *pheow* is a particular jackal which accompanies a tiger and warns it of danger.

The sambar also has a warning note, often used when a tiger is near, and variously described as "belling" or as a "pook" or a "dhank". I have no experience of a tiger making a similar noise, and if it does so (as many people say), then I think it must be entirely coincidental and not employed as a ruse for "calling up" sambar, as some people assume.

It is tigers for which the Park is noted. There was a kill on my second day there, and I set off with *mahout* Kallan on cow elephant Anarkali — which means "flower bud of pomegranate". I remember the names of these two, because they were the best combination of *mahout* and trained riding elephant that I have ever known.

We followed up the trail where the kill had been dragged. A sambar hind a few feet away was "belling" her warning note. We, too, could smell the tiger which was lurking near by.

A *machan* was soon built, and I sat up during the day. The tiger returned to investigate, but I only caught a brief glimpse of it through thick forest. It finished off the kill that night.

Three days later at Paterpani, while on elephant-back, we encountered a huge tiger at ten o'clock in the morning. It was quietly watching us as we moved down a dried-up *nulla*. Only its head was visible: its body was concealed in the grass, and behind it was a steep cliff.

After "shooting" it with ciné camera, we approached nearer. Contrary to my expectations it did not retreat into the grass behind it, but dashed easily and gracefully up the precipitous cliff.

I signalled to *mahout* Kallan to take Anarkali quickly round to the other side of the cliff, as there would be a chance of seeing the tiger again in the thick forest beyond. We set off at a brisk pace. The tiger was also making off at the same pace towards the thick *sal* forest.

We converged and met face to face, within about fifteen feet of each other.

The tiger, a huge and magnificent male, sat down to scrutinise us in the tangle of trees and thick undergrowth. Anarkali flapped her ears and ate, showing absolutely no fear of the tiger sitting only a few feet away.

Here perhaps I should mention that trained elephants, as well as wild ones, are normally very scared of tigers. By instinct and by experience they know that these big cats are potentially dangerous with their large teeth and sharp claws. And an elephant's trunk is a most sensitive and vulnerable organ, a veritable lifeline without which it would quickly die of thirst and starvation, apart from pain and other ill-effects.

Only one trained elephant in a hundred, ridden by one *mahout* in a hundred, is staunch in the close presence of a tiger.

I signalled to the *mahout*, by tapping his shoulder, to advance one pace nearer in order to get a clearer view of the tiger. Anarkali instantly obeyed, and for five minutes we watched each other.

The whirr of the ciné camera did not appear to worry the tiger, which probably thought the elephant was a wild one, and making the weird noises that elephants make. But when the boy who was accompanying me eventually spoke, the tiger sprang up in surprise and dashed away in a

fearful flash of rufous-orange and black through the green undergrowth.

An unforgettable sight. And the smile was on the face of the *mahout*.

"Was the elephant well behaved?" he asked proudly.

"The best I have ever been on," I replied and meant it. For even when the tiger sprang up Anarkali never flinched.

Not long after my visit to the Park, I wrote an article for the *Calcutta Statesman* entitled "The Tigers of the Hailey Park". A few months later I received a letter from Lord Hailey, to say he had enjoyed reading it. "It recalls some very pleasant memories. . . . I had last month a letter from Jim Corbett. He reminds me in it of the day when he and I fished the Ramganga together; from one stand, he says, I killed eighteen fish and from one a little lower down he killed twelve; it took three men to carry our catch back to camp.

"He and I would both give much to see those days again. Surely St. Peter and the other good apostle fishermen on the Sea of Galilee will arrange that there shall be an occasional Anglers' Day in heaven?"

A cutting of my article also chanced to be sent to Jim Corbett in Kenya, and a letter came from him in February 1955.

"There was great opposition (from sporting interests) to the formation of the park and as soon as Hailey left, the District Officials combined and reduced the area of the park from 180 to 125 square miles. . . . Now that the Uttar Pradesh Government is taking an interest in wild life I am hoping it will be possible to restore the fifty-five square miles to the Park. Your article has done a lot to stimulate interest in wild life, for in addition to the copy Stockley sent me . . . I have received other copies of it from different parts of the world. Continue the good work, for wild life has few friends and many enemies."

Very soon after Jim Corbett wrote the above letter to me he died. I sent the relevant extract, about restoring the fifty-five square miles of the Park, to the Chief Wild Life Warden of U.P. I hope he and the State Government will do their best to maintain this wonderful place in its fullest size and with the strictest protection.

It is now proposed to dam the Ramganga river just below the Park boundary, and the resultant lake will inundate eighteen square miles of the Park. The Chief Wild Life Warden and I have tried to make sure that the lake will remain under the control of the Park.

In 1957 the Park was renamed the Corbett National Park, to be a permanent memorial to such a grand sportsman, naturalist and writer.

The Kashmir Stag

At the western end of the world's highest mountain range is some of the most magnificent scenery to be found anywhere, with some very interesting fauna.

Even those who have visited the wonderful scenic parks of North America have expressed their admiration for the mountains and river valleys of Kashmir. I know that I myself, after a visit to the U.S.A. and Canada in 1957, a year when the wild flowers of the Grand Teton National Park were better than ever before within living memory, was again filled on my return to Kashmir with wonder at such an earthly paradise.

I have visited Kashmir a number of times. I have seen the crisp, clear days of spring in April and May, when alpine flowers vie with the crown imperial lily and wild irises for place of honour in nature's beauty contest, and later when wild roses adorn the mountain sides.

I have seen the full summer maturity of August and September, when visits to the higher elevations bring back afresh the wonders of spring. And I have seen the autumnal glories of October and November, when the dying fiery blaze of the chenar trees, introduced by Moghul emperors, defy all attempts at description.

I cannot imagine anyone not agreeing with the Moghul poet who wrote, "If there is a heaven upon earth, it is here, it is here, it is here."

Srinagar, at about 5,000 feet above sea level and in the "vale" of Kashmir, is usually rather dry and tired-looking. But it is a very necessary outfitting centre and starting place for expeditions into the mountains and river valleys. Out in these wild parts one can camp either in a Rest House or under canvas, and drink in to the full the peaceful charm of the best that nature can offer.

During my visits to Kashmir since the war, I have been investigating the chances of survival of the noble *hangul* or Kashmir stag (Pl. 34-35). This animal is the local representative of the European red deer, and used to be

protected as "royal game" by the Maharajas of Kashmir in the old days. There were probably about 5,000 of them fifty years ago, and about 2,000 left in 1947.

Then the régime changed almost overnight with Kashmir's official accession to India, and with Pakistan's claim to this State. Much damage was done to the fauna in those days of dispute, and the Kashmir stag's numbers became depleted to about 300. Even the wild pig were said to have been exterminated in DACHIGAM SANCTUARY except for two or three animals, but these two or three had increased to about fifty when I was there in 1957, and I managed to photograph some of them.

In April of that year I made a rough estimate of the Kashmir stag population with the help of local officers, and I think that they had increased to about 400.

In the winter the deer leave their high elevation summer pastures and come right down to their winter quarters in Lower Dachigam Sanctuary and other places, and in 1957-8 a rough estimate made by local officers put their numbers at 550.

When I was there in November 1960, I came to the conclusion, after discussing the situation with those who knew most about the deer, that there were only 250 left. Again, in August 1962 my visit produced even more disappointing results, for it appeared that only about 175-200 were alive. A few still exist in the northern Chamba district of Himachal Pradesh, where they are said to be well protected.

Kashmir stags, known to sportsmen as *barasingha*, shed their antlers in March and early April, before setting off for their summer haunts.

I have very happy memories of "hunting" these deer with my cameras in Lower Dachigam in April 1957 when the early spring flowers were forcing their touches of colour through the last remnants of the winter's snow.

And when in September of that year I climbed from a 6,000 feet high river valley to the 11,000 feet high alpine meadows and forests of birch and blue pine near Sangergulu in Upper Dachigam (Pl. 33), distant views of the deer added to the nearby charm of the wild flowers, which were only then just starting to fade.

But by November, when they return to Lower Dachigam, they are in hard horn again; and I will never forget the glimpse I got of a magnificently antlered stag, in company with a number of hinds, fawns and younger stags, making their way through the thick undergrowth of willows. No photograph was possible, but I watched them at close range, spellbound.

How I would have liked to have continued watching these deer, to study their social behaviour. I presume their way of life is much the same as that of the European red deer, mainly matriarchal with the hinds taking over the leadership and the stags separating and being little more than agents

for procreation.

The Maharaja, I was told, used at one time to keep a small herd of captive Kashmir stag. They were easy to keep and became very tame. I think it may be necessary to repeat this experiment in order to ensure their survival.

What wonderful memories are brought back by the very mention of so many names in Kashmir, including the Erin valley, the Sind river and Sonamarg, the Liddar valley, the rivers Bringhi and Dyus! The last-mentioned stream flows near the sanctuary of DESSU, where one or two Kashmir stags occasionally come.

Enemies of the Kashmir stag in the wild are the black bear (Pl. 36) and leopard, which sometimes prey on the young deer in or near Lower Dachigam. But both directly by poaching, and indirectly by over-grazing with domestic stock, man is the main cause of the decline and possible impending fall of this fine deer.

Even in the high elevation summer haunts of the stag, the *bakrwallas* with their cattle, sheep and goats leave hardly any place ungrazed and unspoilt; and they also have guns and dogs with which to hunt the deer.

During each of my later visits to Kashmir, I have tried as tactfully as possible to persuade the authorities, under whose jurisdiction the stag is, to give the fullest protection both to the stag and to its habitat.

In 1960 and 1962, although I was sponsored by I.U.C.N. and by the I.B.W.L., I could make little impression on the authorities. To what extent the fault is attributable to me, or to the Forest Department whose task it is to preserve wild life, I am not sure. But I tried as diplomatically as possible to explain that if the stag became extinct it would be a great loss to Kashmir as well as to the rest of the world.

The difficulty has always been that development of the country and the advancement of living standards have had priority. Moreover, India-held Kashmir enjoys a "special status" and is not quite on the same footing as the other States of the Indian Union.

Another difficulty has been the fact that Dachigam has successively been under different Departments since 1957: under Fisheries (because there are a trout hatchery and trout stream in Lower Dachigam), under Forests and under Tawaza (Entertainment).

It would seem reasonable that wild life and the sanctuary in which it lives should be under the Forest Department, especially as this Department has a Game Warden whose task it is to preserve wild life and as there is some forest in the sanctuary.

In April 1957, when I spent a lot of time in Lower Dachigam photographing the deer, and in September of that year when I did a trek lasting several days to the mountain grazing grounds of the deer in Upper Dachigam, I received much valuable co-operation from G. M. Malik, Director of

Fisheries, as well as from the Forest Department.

Brown trout were introduced from Britain into Kashmir about fifty years ago, and this is one of the best cases in the world of a most beneficial introduction of a new species into a country. They seem to do even better here than in the country of origin, and grow to a big size and provide excellent sport. Trout fishing here is being very well managed and appears to be better than in pre-Independence days. Trout have been introduced from Kashmir into the Kulu Valley of northern Punjab and into Bhutan, and I hope that they will soon be started in Nepal also.

In the lower mountain ranges of Kashmir lives the Himalayan black bear (Pl. 36) which has a white V on its chest. The black bear is also found in most of the forests of northern India, whereas it is the sloth bear that is found in peninsular India. Higher up in the mountains lives the brown bear, which is less harmful as a predator of the Kashmir stag than the black one. The Tibetan blue bear is found farther north and to the east, and its cured hide has sometimes been mistaken for that of a *yeti*. All bears can be very dangerous if encountered, sometimes attacking without provocation, and are best treated with the greatest discretion.

In Upper Dachigam I have seen brown bear, and also the tiny musk deer (Pl. 36). This latter creature is much persecuted all along the Himalayas for the musk pods collected from the males, this musk being the base of many of the perfumes of civilisation. The males carry no antlers, but have peculiar "tusks", which are elongated upper canine teeth, longer than those possessed by barking deer. In the higher part of Kashmir and eastwards are found the magnificent monal pheasants and handsome chukor partridges (Col. pl. 12) and so many other interesting birds.

In the late spring and early summer there are great opportunities for bird photography in Kashmir, amid such pleasant surroundings and in such a congenial climate. Most of India's bird photographers have spent happy holidays here, with resultant well-illustrated books of great appeal to all.

Salim Ali and Loke Wan Tho have often done bird photography here, as also did R. S. P. Bates and E. H. N. Lowther in the past. Among the best subjects are the beautiful paradise flycatcher and golden oriole at their nests. I myself long to try this type of bird photography.

Though this chapter is about the Himalayas, I must confess now that my own limit has been 12,000 feet in Upper Dachigam. For those younger and with more mountaineering ability there are the higher elevations of this part of the world, with their unique fauna to be observed and photographed.

These heights are inhabited by wild sheep — shapu or urial, nayan, ovis ammon and bharal; and wild goats — ibex, markhor and Himalayan tahr;

and goat-antelopes — serow and goral (Pl. 36). Preying on them is the snow leopard.

In the old days many enterprising and energetic sportsmen, chiefly army officers, used to go on expeditions to stalk and shoot good specimens of these high altitude animals. There are several good books on this subject, one of the best being *Stalking in the Himalayas and Northern India* by Lt.-Colonel C. H. Stockley, published in 1936.

Stockley was a keen naturalist as well as a shooter of game animals; but although he took some photographs of live animals in their natural environment, he was not in the same class of photographers as Champion. Like Corbett, he retired to Kenya, where he died in 1955. He provided much information on the fauna of India to R. I. Pocock of the British Museum of Natural History.

As in the case of Corbett and myself, Stockley and I never actually met but we exchanged several letters, for he was always wanting to know how India's wild life was faring after he had left the country.

Very few persons go to shoot or to see these high elevation animals nowadays. Their numbers will have been decimated by military activities at the "front line" between India and Pakistan, and by the aggressive activities of the Chinese in Tibet and along India's northern border.

Immense opportunities now await young and adventurous men to go to these places and observe and make photographic records of what wild life is left. What excellent chances of training for army officers, who would not only benefit themselves and the army but also bring back much valuable information of natural history interest.

From North Punjab to Nepal

Moving south and east from Kashmir I think that wild life preservation is fairly active in the Punjab and neighbouring Himachal Pradesh.

In northern Punjab, just south of Kashmir, are to be found nilgai and wild pig. The "gai" of nilgai means cow, and therefore the nilgai or blue bull has somehow come to be regarded by Hindus as sacred and deserving of full protection, although it is really an antelope. The pig, on the other hand, can be eaten by some Hindus, but to Muslims it is completely taboo.

Several of my Kashmir friends told me the story of what happened at the time of partition in 1947. When Hindus in Pakistan were moving across the new border into India, and some Muslims were leaving India to settle in Pakistan, wild animals were also not without an instinctive wish for peaceful survival. A lot of nilgai in Pakistan crossed over into India where they would be safe, and numbers of wild pig crossed into Pakistan for their security!

In the extreme north of the Punjab the valleys of Kangra and Kulu are famed for scenic beauty. But when I was in the Kulu Valley in 1957, I was told that very little wild life remained, even in the mountains. Even trout had become scarce in the River Beas due to severe floods.

When I was in Himachal Pradesh in September 1961 I found strict wild life protection in force. I was told that the Lieut.-Governor, whom I know personally to be a very keen wild life conservationist, was once on tour in some country district. During dinner a bird was served, and he asked what it was. "Jungle fowl," came the reply, and it was "a gift from some local well-wisher," probably someone who wanted some favour done. This all happened during the close season.

The Lieut.-Governor promptly ordered the offending out-of-season bird to be removed, and the donor to be warned against such breaking of the shooting rules. If this most commendable act could be an example to Government officials in all parts of India, to be followed at all times during the close seasons for deer and game birds, then wild life would stand a

better chance of surviving.

While in Himachal Pradesh I trekked to a mountain called Taradevi, about 10,000 feet in height. The northern slopes, facing Simla, are gradual and forested, but the southern ones are rocky and precipitous. I saw several blackcrested kalij pheasants on the way there.

It was great fun crouching at the top on the brink of a sheer precipice, watching the griffon vultures and the lammergeiers, huge scavengers, soaring on the thermal currents. I was with the young and keen Wild Life Warden, K. L. Mehta, at the time. We would see a tiny speck some three or four thousand feet below us, wheeling round and round. In no time at all, it seemed, the same bird would swish past us, very close, sailing effortlessly on the wind currents. Then another and yet another bird would sail past and disappear beyond the rocky outcrops on the mountain top.

These lammergeiers, picturesquely described by at least one writer as "flying dragons", have a wing span of nine feet and nest here in the months December to March. They are purely scavengers, and never kill anything alive. Like other scavengers, such as kites and vultures, they are an essential part of the social pattern of the East, removing garbage, refuse, carcasses and so on — for no pay at all.

Farther east I have only once visited Naini Tal in the Kumaon hills, made immortal by Jim Corbett. I did however catch a wonderful glimpse of Nanda Devi and the whole range of snows. From 5.30 a.m. I had been watching the northern sky, but low clouds obscured the view. Half-way through breakfast, however, the clouds parted and the whole line of high peaks glistened in the morning sun. The rest of my meal was, needless to say, eaten *al fresco*. After fifteen minutes a veil of clouds again covered up the view.

The area which includes NANDA DEVI, 25,640 feet and one of the highest mountains actually inside India, is a sanctuary. I suppose it is the nearest thing we have in India resembling the "wilderness" areas of the U.S.A. High elevation fauna and flora are to be found there, probably in greater numbers and variety than anywhere else in the Himalayas.

The sanctuary is under the Uttar Pradesh Forest Department. Unfortunately there are reports, on good authority, of extensive poaching by local villagers, especially of the unfortunate musk deer. Here is an opportunity of preserving a valuable wilderness area which should not be lost.

*

Nepal cannot be omitted from this book altogether, because there are a number of the great Indian one-horned rhino there (Pl. 51-56). These rhino, together with tigers, used to be protected as "royal game" in the old Rana

régime. After this régime ended in 1951, there was much poaching in the famous *dun* known as Chitawan; and unsettled political conditions together with a huge influx of settlers from the hills have not been conducive to wild life preservation.

The rhino situation in Nepal became more and more serious, and in the spring of 1959 I was asked by the I.U.C.N. to go there and do a brief survey of the status of this much-poached animal. I found that there were only about 300 rhino left, and that in addition to poachers the main factor operating against their survival was loss of habitat due to so much land being opened up for cultivation and grazing.

I also found that the rhino of Nepal had "gone underground", so to speak. So many of them had been shot by the Ranas (I was told that one Rana had once shot ninety-seven in one month!), and they were being so much disturbed by poachers, that they usually hid in thick undergrowth of scrub jungle during the daytime, and resented being approached.

While searching for them with two others on elephant-back, I experienced two interesting incidents during the twenty or so occasions on which I was charged by them. Once my elephant was pushing its way through dense forest when we came to a muddy depression in which four rhino were wallowing. Two of these were a mother and a small calf.

The mother of the calf charged right at us, and our elephant lost its head and tried to bolt. In the confusion my hat and camera lens-hood got knocked off. After the mother rhino had gone away in search of her fleeing calf, we looked around for my missing things.

The elephant soon found my hat and handed it up to me with its trunk. But we had to dismount to search for the less conspicuous lens-hood. While we were on the ground, the rhino suddenly reappeared and charged again.

One of us scaled a tree, while the other and myself broke all records in climbing up the tail of a frightened and trumpeting elephant and mounting it!

The other occasion was when I was on one elephant, followed by two other elephants spaced apart and some distance behind. I was looking for rhino in thick grassy country, and finally saw one standing with its back towards me. As my elephant approached noisily within a fairly close distance, I photographed it and was surprised that it did not turn round in my direction, or at least glance in my direction.

So I told the *mahout* to take the elephant closer. The rhino then wheeled quickly round and charged — and on its way towards me was joined by her newly-born calf which had been hidden in the grass.

Now most trained elephants are thoroughly frightened of rhino, and it is only after many months of forced acquaintanceship with rhino that a Forest Department elephant in Assam or Bengal becomes staunch and unafraid, if

ridden by a good *mahout*. The elephants of Nepal, in my opinion, are better controlled than those in India, and are actually trained to charge back at a charging rhino, which usually does not press home its attack on a staunch elephant.

And this is what now took place: the rhino and my elephant angrily confronted each other, at very close quarters. The rhino then retreated with her newly-born, pink-coloured baby.

At that moment the other two elephants came up, and their *mahouts* shouted to us that there was a tiger prowling round, for their elephants had made that unmistakable metallic sound with the tips of their trunks on the ground, revealing the presence of a tiger.

That explained the rhino's peculiar behaviour, why it was facing the other way without looking round at me, and why the calf had been hidden. A tiger was after the calf, for a baby rhino (or baby elephant) is a great delicacy to a tiger.

At that moment the rhino charged again. And then again for the third time. My elephant charged back each time. The grass was very thick. And my *mahout* was wildly excited, waving his arms and loudly shouting to the others ordering them not to make a noise because the *sahib* was trying to take photographs!

I was trying very hard to get some pictures of this unique occasion, under very difficult conditions. I had to hold down one of the waving arms of my excited *mahout*, and then try and take a photograph in between the charges of rhino and elephant against each other, in a place where the grass was less thick! The result was what is probably the only photo ever obtained of a newly-born rhino calf with its mother (Pl. 55). The tiger had by then gone away.

Reports emanating from Nepal after this visit indicated that my recommendations for preserving the rhino and for increasing the area of the Mahendra National Park had not been followed, and that the general situation in the famous Chitawan valley had deteriorated. Rhino were reported to have decreased from 300 to only about 160 there.

So again I was asked to go to Nepal, this time by the Fauna Preservation Society of London, and the Chief Conservator of Forests in Kathmandu made all arrangements to receive me. This second visit took place in the spring of 1963, and I found that recently there has been a change for the better with a decided improvement in the law and order situation. The rhino are estimated to have increased from the all-time low level of 160 in 1960 to 185 in 1962, and I made fresh recommendations for their better protection.

I have also urged the Government of Nepal to give full protection to the few remaining wild buffalo in the south-western part of the country, especially as this fine creature has become extinct in the neighbouring Bihar and Bengal States of India.

Quite a lot of those beautiful animals, the lesser or red panda (Col. pl. 8), come from Nepal each year to Calcutta for export to foreign zoos. They are a most handsome chestnut-red in colour with white markings, and inhabit the medium elevations of about 6,000 to 12,000 feet where there are extensive bamboo forests. Very little is known about their habits in the wild state, in fact I had great difficulty in finding out their Nepalese name and the localities where they are to be found. They also exist in Sikkim, Bhutan and the western end of the North East Frontier Agency (N.E.F.A.). They make very attractive exhibits in captivity, and are a favourite pet of India's Prime Minister, Jawaharlal Nehru.

Animals Mythical And Real

Three years ago I met the Maharaj Kumar of Sikkim, and we discussed wild life preservation. I asked him about the existence in Sikkim of the genuinely wild yak, and he later wrote to me and said that he had made inquiries and that a few were reported to survive near Amne Machen (Marchen Pomra) range in Golok. Apparently they are of a very big size, and the bulls occasionally mate with domestic yak cows, producing large offspring.

Wild yak probably exist in other parts of the Himalayan range and Tibetan plateau, but I have no other knowledge of these animals.

The *shou* is the local red deer representative of the Chumbi Valley in Tibet, and eastwards into Bhutan and south-east Tibet. This fine deer is also known as the "Sikkim stag" because the Chumbi Valley, its main habitat, used at one time to be part of Sikkim.

It has been extinct in the Chumbi Valley since about 1925 when F. Ludlow of the British Museum saw three hinds in the area of Lingmothang. None has been reported in this valley since then, and none has ever existed in what is now Sikkim.

Ludlow told me in a letter that he believed that the *shou* had become extinct in northern Bhutan, which he traversed from west to east in 1933 and 1949 in company with G. Sherriff. But in 1962 I heard a report that one had been seen recently in central Bhutan, and I am trying to find out some more about this.

Ludlow also told me in his most informative letter that the *shou* occurred "in fair numbers" during his visits with Sherriff in 1936, 1938 and winter of 1946-7 to the district of Tsari in south-eastern Tibet. Tsari is where the River Subansiri and its tributaries enter the North East Frontier Agency of India, so it is just possible that there may be a few *shou* in this part of N.E.F.A. and that this creature may yet be saved from extermination.

The *shou* is a magnificent deer, larger than the Kashmir stag, and there is a difference in the antlers of these two sub-species of red deer — the beam

of the *shou's* antlers being bent forwards at the third time so that the upper half overhangs the face.

Before leaving Bhutan, mention must be made of the takin (Pl. 39), the largest of the goat-antelopes. The takin is a peculiar, clumsy-looking animal of about ten hands in height at the withers, which are high. There is much variation in colour between the sexes, animals of different ages and different subspecies found in Bhutan, N.E.F.A., southern China and northern Burma.

Male takin are often golden yellow, and may have been the origin of the "ram with the golden fleece" of Jason in the old Greek legend. Very old bulls become darker, females are darker and slightly greyish and the very young ones are dark grey. The horns of young animals grow more or less straight up; but as the animal becomes older the horns grow outwards and downwards with the tips growing upwards. Both sexes have horns, but those of the males are bigger.

When I met Raja Jigme Dorje, Prime Minister of Bhutan, he told me that there are a lot of takin in northern Bhutan, and he even suggested that some places might be suitable for national parks. He also said he had seen two different kinds of takin, a smaller and straighter-horned kind and a larger kind, but I think these may be just younger and older animals seen in separate groups.

Takin are found all along the higher hills of N.E.F.A., especially in the Mishmi Hills. They usually remain up near the snow line, but often congregate at salt-licks and hot-springs at much lower elevations, especially in the cold weather.

Several were captured recently in northern Burma, and one of these was sent to the Bronx Zoo in New York. Another went to the Peking Zoo as a mate for the male takin already there. I think there are no others in captivity anywhere in the world.

While on the subject of rare animals, perhaps I should mention that I do not believe that a new and strange creature such as the *yeti* will be discovered in the central Himalayas. A hide and a scalp, strongly believed to belong to the "abominable snowman" and collected during the 1960-61 expedition to Nepal, turned out to be portions of the skins of the Tibetan blue bear and the serow respectively.

During my last visit to Nepal in March 1963 I was informed by a senior official of the Forest Department that the *yeti* had been officially removed from the list of totally protected animals. Readers may form their own opinion as to whether this animal was removed from the protected list because it has become more numerous or because of some other reason!

I also do not think that the *buru*, another mythical creature, will turn out to be anything alive and tangible. This *buru* is the "monster" of the Dafla and other tribes in N.E.F.A. I have been told that in the 1940s a very high Indian Civil Service Officer visited these tribes, and took his daughter with him, accompanied by an escort of Assam Riflemen. When the party reached the large swamp, in which small earthen mounds are locally believed to contain the bones of large animals which became extinct hundreds of years ago, the I.C.S. Officer asked some tribesmen to dig to see what was to be found there.

The local men were too scared to do this. Something terrible would befall them if they did, they said.

So the Officer put the Assam Riflemen on to dig. A few days later his daughter fell ill, was rushed down to a hospital in the plains — where she died. . . .

Later on an expedition was taken to these hills, sponsored by a famous London daily. They were looking for a live *buru* said to exist in certain swampy areas. They found nothing, but returned excited, bearded and sunburnt, and a book was duly published about the whole affair.

It was about that time, in the spring of 1948, that I remember terrific excitement and dismay at startling reports of a live monster said to be ninety feet long and forty feet across, moving slowly along and feeding off the tops of trees as it went! The local inhabitants and tea garden labourers in the plains of Darrang District became much alarmed. This rumour was probably a side effect of the expedition to search for the *buru*.

I do not think that any such creature now exists alive. But it is perfectly feasible that some large animal may have become extinct several hundreds of years ago, and still lives on in mythological form in the legends and folklore handed down from generation to generation of some of the tribal peoples of this Himalayan region.

Strange "creatures" are said to exist also in the Naga, Mikir and other hills south of the Brahmaputra river, where tribal peoples have such stories, usually connected with remote and mysterious places. But nothing of interest has ever materialised, as far as I know.

All along that magnificent country in Sikkim, Bhutan and N.E.F.A. there are wonderful fauna and flora. But being backward and undeveloped border areas, inhabited by primitive but most interesting and colourful peoples, the ordinary person is not permitted to go there. How fortunate are the few who somehow have managed to explore those regions! Unfortunately the average army officer and administrative officer stationed on duty up there nowadays is not wild-life-conscious, though there are signs that this is being remedied.

Marvellous birds, including horned, monal and blood pheasants, live up there. The orchids and rhododendrons have to be seen to be believed. Those who have seen the rhododendrons in bloom south of the Se La Range in the spring have described these to me in glowing terms: whole mountain sides smothered in four or five different colours of these flowering trees.

This area is best described in the books of the late F. Kingdon Ward, whom I knew well. An explorer and pioneer plant hunter in the mould of Ludlow and Sherriff, he also spent a great deal of time in Tibet and northern Burma, and wrote books on these regions.

Being a mere plainsman and a "non-official", I have usually only managed to venture a short way up the gorges of the various rivers which debouch from the Himalayan foothills.

But in November 1961, thanks to the kind permission and assistance of the N.E.F.A. authorities, I managed to accompany Salim Ali on a four-day visit to a place called Tuting very near the Chinese border, right up the Brahmaputra river (here called the Siang, after being the Tsangpo and before becoming the Dihang).

There is no jeep track to this place, and it is fourteen days' march northwards from Pasighat in the foothills. But we did the journey in a Dakota in forty minutes. The plane also carried several "other ranks" of the Assam Rifles, several drums of petrol and oil, some rations such as *atta* and rice, and a number of sheep and goats as meat on the hoof.

There was no door to the plane, presumably for quick loading and unloading, and through this large aperture we watched the thickly-forested mountains flash by — perilously close. We saw the scars of the terrible 1950 earthquake — whole mountain-sides torn away, but now being gradually covered by new vegetation. Soon there were snow peaks to the north and on each side, and the steep gorge of the Siang river far below.

The next four days were spent by Salim Ali in observing bird life and investigating the possibilities of conducting a study of migrating birds, with possible netting and banding. We learnt that during certain weeks of spring and autumn there are northward and southward migrations, mainly of wildfowl which probably visit the lakes of East Pakistan, Cachar, Manipur and northern Burma by this route.

I was busy finding out all I could about the animal life of the area, and was shown the exact ridges where takin are found at various times of the year. I also managed to photograph a *glang* (Pl. 38), which appeared to be a cross between a domestic cow and a domestic yak. These animals are also found, I believe, from Ladakh to Bhutan along the Tibetan border, where they are known as *zho*, and are used as beasts of burden.

This *glang* had been brought from the north by a refugee from Tibet, and a Government interpreter had purchased it. It was small, and black and white in colour.

I also searched for and photographed the local gayal (Pl. 37), an animal in which I have always been much interested. The gayal is much the same as the "bison" or gaur in appearance, the chief difference being that the horns of the gayal are straight while those of the gaur are curved. They were at one time regarded as two distinct species, *Bos frontalis* and *Bos gaurus*, but nowadays only the gaur is regarded as a wild species and the gayal is thought to be a domestic or domesticated animal.

It would seem, then, that the gayal is either the domestic survival of an extinct wild species, or else a cross between the wild gaur and the domestic cow — a hybrid which breeds true (perhaps in the fourth generation and afterwards). It is now generally thought to be the latter; but the extraordinary thing is that there are no gayal, and never have been any, in central and south India where the gaur is common and where local tribes and villagers have always kept cattle!

The gayal, or *mithun* as it is known in these parts, is only found in north-east India and northern Burma. In the Mishmi Hills of N.E.F.A. I have seen a herd of "semi-wild" *mithun* containing bulls, cows and calves all of the same colour and conformation, in other words animals which breed true and which look like gaur except for their straight horns. These semi-wild herds of *mithun* wander over the mountains by themselves for grazing, but always return to the villages at night. They are very fond of salt, and possibly this is the reason why they return so regularly.

Some people have reported *mithun* (cows) inter-breeding with wild gaur (bulls), but in all the villages in the mountains of north-east India that I have seen, the tendency was for *mithun* to inter-breed with domestic cattle. The result of this crossing with domestic cattle seems to introduce more and more white into successive generations, making them pied at first and sometimes eventually white all over. I have taken photographs of them in all these stages.

Mithun are not used for ploughing, carrying or pulling. And I do not know of anyone milking the cows. They are a form of currency and are used for barter. Several will be paid by the family of a boy for the girl he is to marry. Occasionally a *mithun* is sacrificed at a ceremony.

Nor far from Tuting there is a suspension bridge across the River Siang. I crossed over it one day. It is not an ordinary bridge, but is made of long strands of cane cut from the forests, and is no less than 780 feet long — probably the longest cane bridge in the world (Pl. 40). It shakes with the movement of men walking along it, and sways gently in the wind: far below it is the mighty and turbulent river.

Dr. Verrier Elwin, the famous anthropologist and Adviser on tribal affairs to the authorities of N.E.F.A., told me that as he did not relish the idea of crossing this bridge he had a raft made, and crossed the river on it — a thing which is never done by the local people. I believe several *mithun* had to be sacrificed afterwards to put things right with the river gods!

During our visit to this remote outpost, I explored the forests near by and collected about thirty species of orchids — a subject in which I am deeply interested. All the lower Himalaya from Nepal and Sikkim eastwards, and all the hills of north-east India including the Naga Hills, Manipur and the Khasi Hills are one of the best orchid regions of the world. There are more than 1,000 species of orchids in Sikkim alone.

Talking about orchids, it was in north-east India that the famous and elegant lady's slipper orchid *Cypripedium fairieanum* was discovered and first exhibited in London about the year 1857. Twenty years later it died out and disappeared altogether in western countries due to attempts to grow it too quickly in hothouses.

Efforts were made to rediscover it, but no one knew where it had come from. The Khasi and Garo Hills of Assam were searched in vain, and it could not be found in Sikkim. Two thousand pounds were offered for its rediscovery. It became known as the "lost orchid".

Then in 1905 it was found again in Bhutan, a later on it was also found in the former Balipara Frontier Tract, now the Kameng Frontier Division of N.E.F.A., which is just east of Bhutan. It grows at an elevation of about 3,500 feet in the Himalayan foothills round these parts, and is a delightful flower because of its intriguing ballerina grace.

Its petals curve upwards at the tips, suggestive of a ballerina daintily lifting the edges of her skirt. This is the orchid which has caused more excitement than any other in the horticultural world.

On our last day at Tuting, S. S. Yadev, the young and very able Assistant Political Officer, arranged a mask dance of Monbas, local Buddhists, for our benefit. In the setting sun they danced to the music of drums and quaint, long trumpets, with the distant snowy peak of 25,445 feet high Namcha Barwa just showing in the distance.

When we were photographed with four of the masked dancers, it was perhaps appropriate that Salim Ali should be standing between two "birds" and that I should have a "beast" on either side of me.

In the hill areas of north-east India we occasionally experience the flowering of extensive wild bamboo forests. Bamboos flower at regular intervals of twenty or thirty years or so: investigations are going on to try and

determine what is the life-cycle of each species. When they flower, they bear fruit and then die. The fruit is eaten by various kinds of wild animals and birds, which relish it. Rats feeding on this food multiply exceedingly and when there is nothing left of this easy and palatable food, they then invade inhabited places — and cause a famine. Food has to be rushed to such areas by the Government to alleviate the hardships of the starving tribesmen.

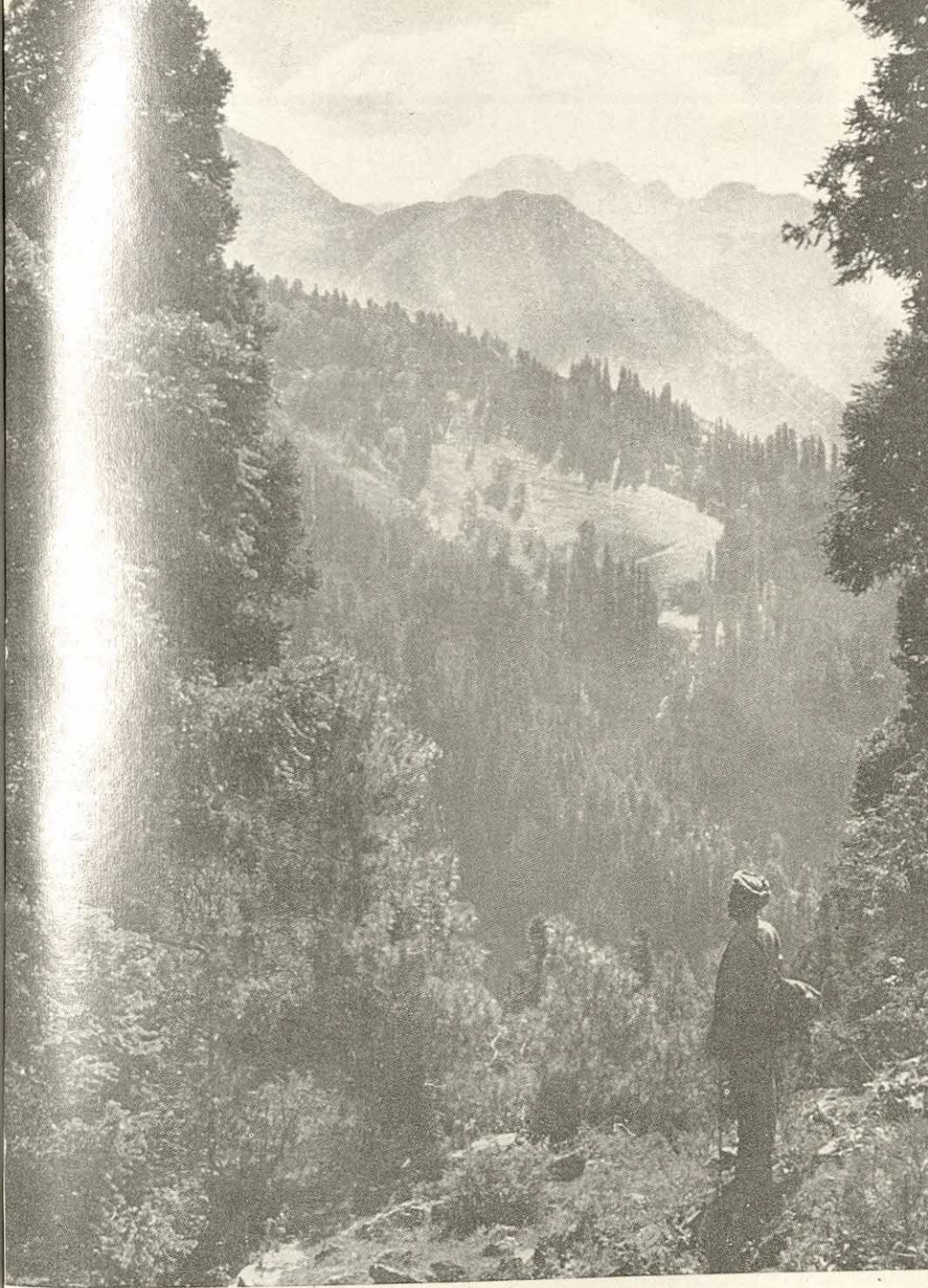
Also very often these rats swarm together in huge numbers all in one direction and perish in a river or some such natural obstacle to their mad instinctive surge. In this case, their behaviour is similar to that of the lemmings of Scandinavian and other European countries — which evidently gave rise to the legend of the Pied Piper of Hamelin, in Westphalia in 1284.

In the extreme east of N.E.F.A., in Tirap Frontier Division where a mountain range divides India from north Burma, rises Dapha Bum, 15,020 feet high. This part of the world is mainly uninhabited and a "wilderness" area; and just before the British left India in 1947 they created (by Gazette Notification, I think) the "Tirap Frontier Tract National Park" here.

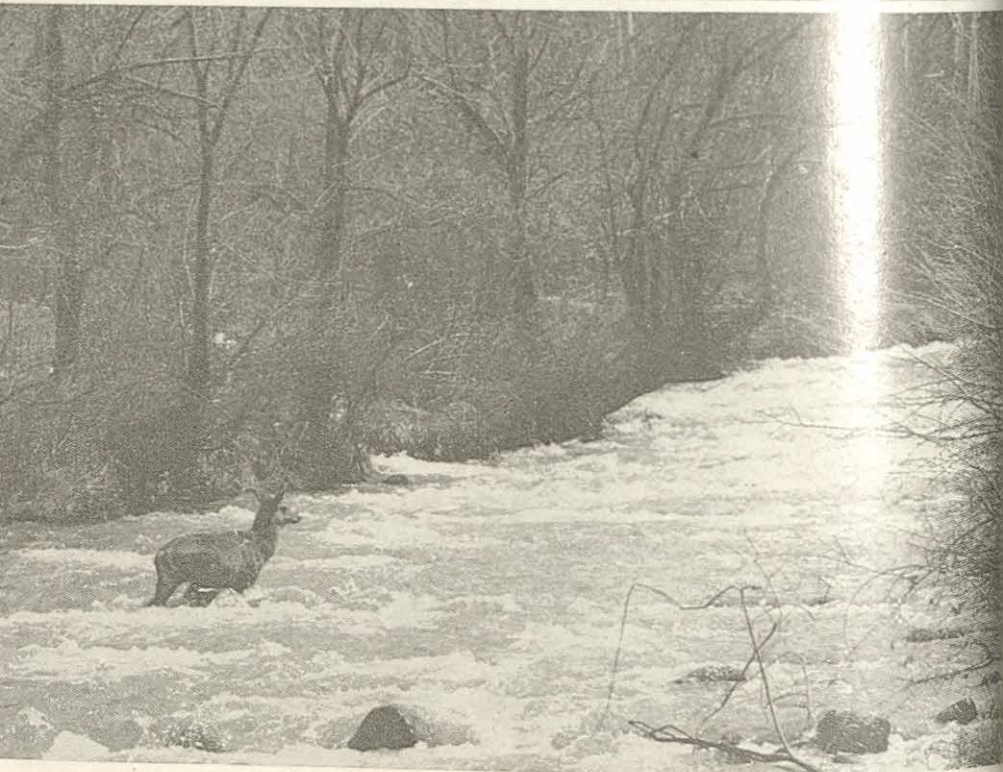
This "park" is 800 square miles in extent, and consists of wild, unexplored country. Kingdon Ward once visited the northern slope of Dapha Bum from the Lohit side, but only got about half-way up before returning. Nobody has toured the Dapha river, or the southern slopes or the top of this mountain, which may possibly reveal new species or sub-species of mammals, birds and plants. Because it is an unknown part of India, very inaccessible and so near the China-Burma border, nothing further has been done to develop or publicise the "park". In fact, this "park" appears to be shelved and may not be taken up at all by the N.E.F.A. authorities.

Up the valley of the River Dehing near by, a few rhino are believed to exist, for their footprints have been observed. It is known that in the southern part of this Tirap Frontier Division a few isolated rhino have sometimes been encountered. These animals are believed to be of the great Indian one-horned species and not the Sumatran two-horned. Here again are excellent opportunities for naturalist-explorers to travel in these parts, climb Dapha Bum, and bring back authentic reports of the fauna and flora, as well as other information.

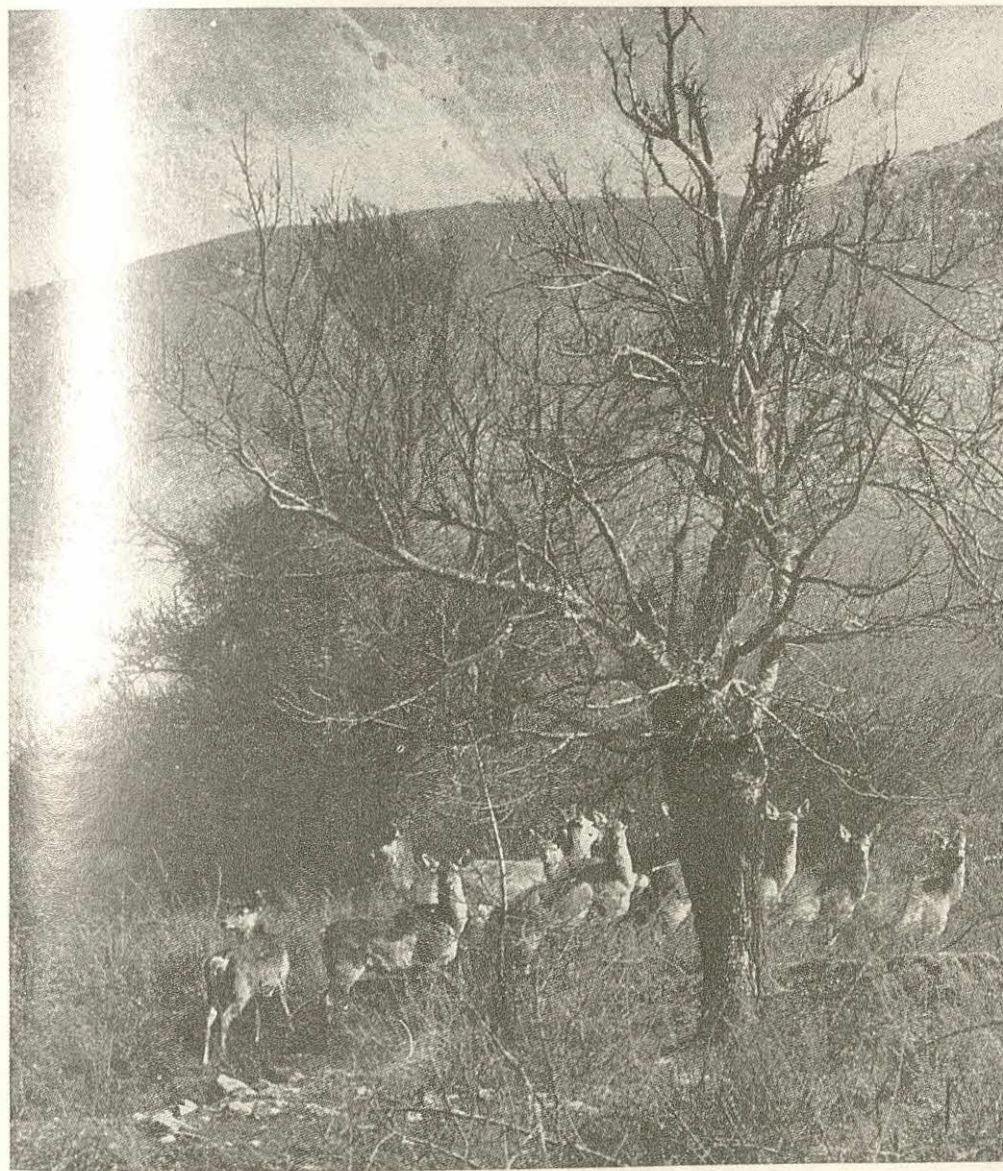
The whole region represents a challenge to the Zoological, Botanical and other Surveys of India as well as to the universities and Defence personnel. I hope that some day it will result in expeditions to unravel the mysteries of these mountains and valleys — and to enable a final decision to be made as to whether the "park" is worth while developing or not.



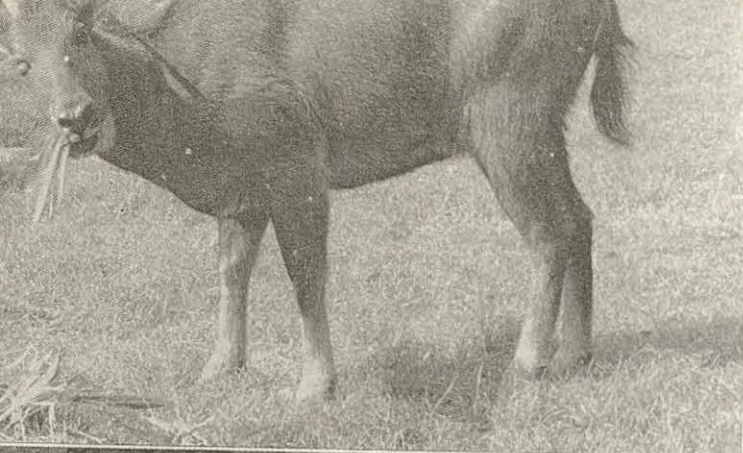
33. The mountainous summer home of the Kashmir stag
in Upper Dachigam



34a. The Kashmir stag comes down to Lower Dachigam in the winter
b. A hind fording a stream in the sanctuary



35. A herd of hinds about to move off into the mountains
in early spring



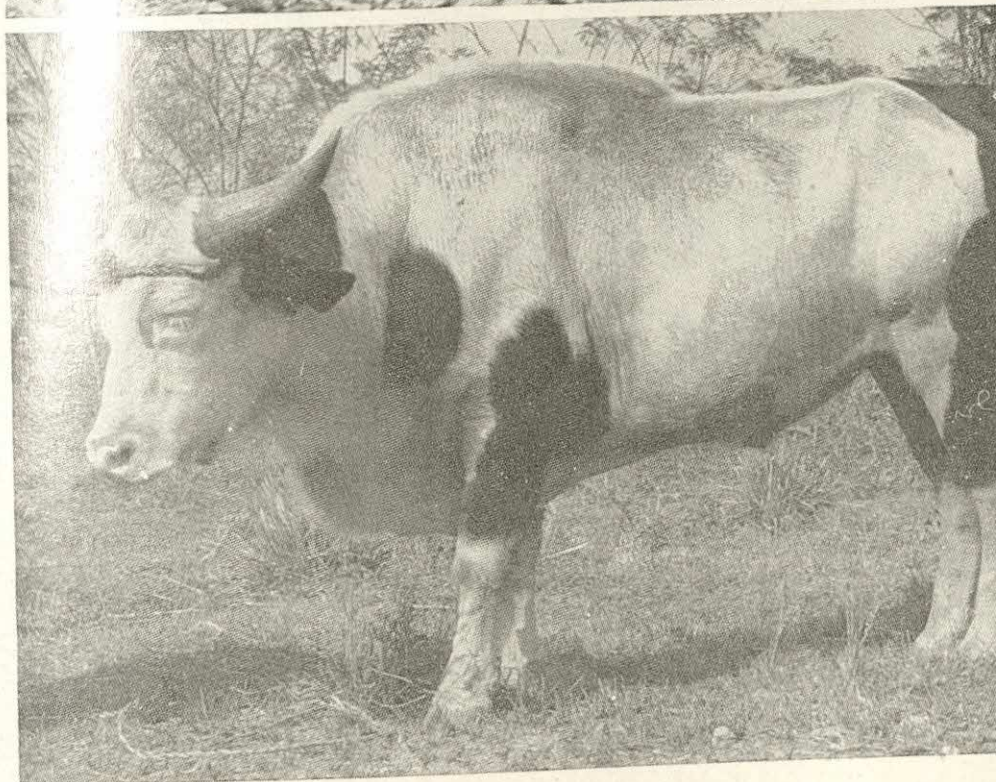
36 A goral—
one of the wild
goats



b. musk deer—
much persecuted
for its musk pod
(are its 'tusks')

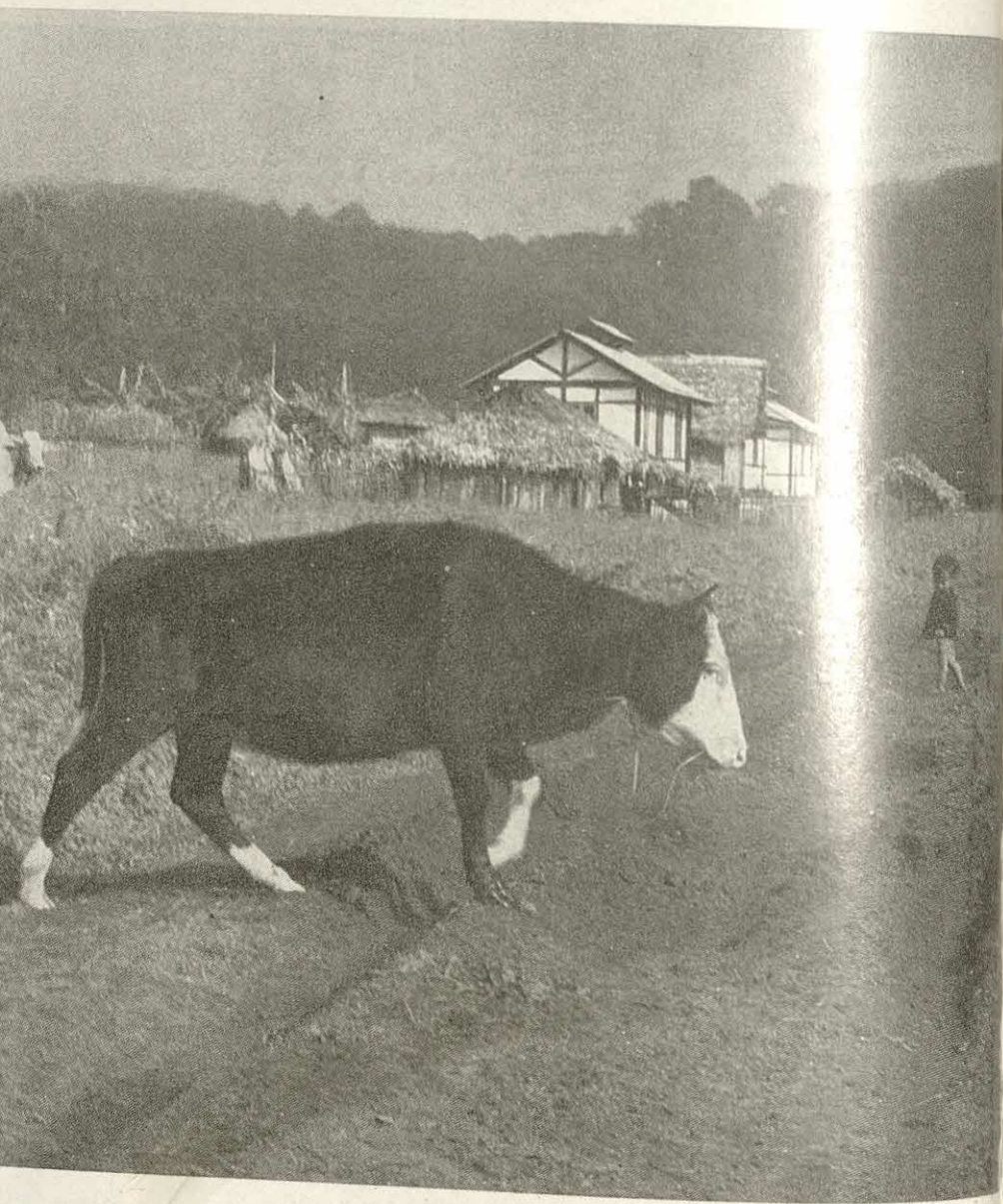


c. The Himalayan
black bear



37a. Semi-wild gayal or *mithun*, all of the same colouration
(compare with Plate 3)

b. The pied markings of this tame *mithun* may be due to
cross-breeding with domestic cattle



38. A *glang* is a cross between a domestic yak and a cow



39. This takin from near the India-Burma border now lives
in the New York Zoo



40. The cane bridge across the Siang (Brahmaputra) near Tuting is probably the longest in the world. In the distance is typical takin country

The Bird Mystery of Haflong

After our trip to Tuting, Salim Ali and I returned to Shillong, the capital of Assam, where I now live. But very soon we set off again by jeep and trailer across the Khasi, Jaintia and North Cachar Hills for Haflong, to investigate a peculiar bird phenomenon in a village called Jatinga.

On the journey to Haflong we passed through lovely hilly country forested first with pines and then with oaks, as well as many kinds of trees. This is the country of the blue vandas — a beautiful sky-blue orchid, and I believe the only blue tree orchid in the world except for one which grows in South America.

When the British first entered this part of the world, early one autumn, so the story goes, they saw in the distance what they thought to be light blue smoke drifting through the trees from the fires of wood-cutters or charcoal-burners. When they approached closer, they found that they were looking at masses of this wonderful orchid, named *Vanda caerulea*.

In this part of the world also grows the local species of pitcher plant *Nepenthes khasiana*. It is a climber, with tendrils at the end of every leaf. And at the end of every tendril is a "pitcher" or fleshy flask-like container complete with open lid. Insects are attracted to the nectar on the underside of the lid: this lid does not need to close, for the insects fall down of their own accord into the pitcher, where they are consumed — if the plant requires this insect food.

These plants usually grow on barren and rocky hillsides at about 2,000 or 3,000 feet above sea level, and thus need insect food. The ones I have planted in my own garden, in richer soil, probably do not need the extra food obtained in their pitchers.

Garampani means "hot water", and at this spot near the Kopili River is a large sulphurous hot spring. As there is a ferry crossing near by, wild animals cannot safely come here to lick the earth or sip the sulphurous water.

But at another GARAMPANI, in the Nambar Forest not far from Golaghat in the plains of Assam, I once helped the Forest Department in making a small wild life sanctuary. This was done so that poachers could not sit up over the nine or so hot springs there in order to wipe out the deer and *mithun* which come regularly to lick the salty earth.

I have often sat in a cloth "hide" overlooking the biggest of these hot springs, and have photographed sambar and barking deer there. Barking deer, incidentally, are solitary creatures, but are occasionally found in pairs. I have only once heard of three being seen together, and this was probably a case of a buck being after a doe which happened to have a partly-grown-up kid with her. The antlers of these deer, even when fully mature, are very small and on long pedicles.

Once when I was sitting in my "hide" waiting for a barking deer and with cameras ready for this small animal, a huge wild bull elephant marched up to within ten feet of me, and stayed for five minutes facing me. It had come to drink from the little stream which flowed there. I was hoping it would not hear my heart pounding. Two paces forward and it could have squashed me to nothing in a matter of seconds. Fortunately the wind was in my favour, and it strode off suspiciously to another spot about a hundred yards away.

Just as I was congratulating myself on a lucky escape, what should come up but another wild elephant, to the same stream ten feet in front of me!

My heart did not beat quite so violently this time, for this elephant was only three-quarters grown, about seven or eight feet high to the shoulder. It drank its fill just beside me, and then went and joined the other. I watched them greet each other with their trunks, as these animals do, for an elephant's trunk is its hand as well as its nose.

Two wild bull elephants together — this companionship of two or more wild bull elephants is known to the Assamese as *mal juria*, or "wrestler friends". I have seen two such wild bulls together several times. Others, more experienced with elephants than I am, have seen three, and even one case of four has been reported.

On our journey through the North Cachar Hills, Salim Ali and I were treated to the welcome sight and sounds of a troupe of hoolocks — the only ape living in India. Not much could be seen of these most engaging creatures, but their loud and familiar *whoop-poo! whooppoo!* came piercingly from the thick evergreen forest.

Hoolocks, or white-browed Gibbons, are fairly small and have long hair. The males are black with white brows, while the females are buff-coloured. Their loud call is a familiar noise in most zoos, and they take to captivity very well. Several of my friends in Assam have reared young ones, and

these do not need to be confined in a cage: they roam hither and thither in the trees of the compound but always return to the bungalow veranda to entertain their owners by their affection, intelligence and peculiar walk which closely resembles that of a drunken sailor.

When we eventually arrived at Haflong, we lost no time in contacting officials and others about the strange bird phenomenon we had heard of. Haflong is a quiet railway town and administrative headquarters in the valley which connects the Brahmaputra plains with the plains of Cachar, and runs roughly north and south.

It had been reported that at a certain time of the year the villagers at Jatinga, just a few miles from Haflong, put lamps out at night and kill large numbers of birds attracted to the lights. We had previously requested the authorities to stop this brutal massacre of birds by means of artificial lights and sticks, and we asked the local Sub-Divisional Officer if it had been done.

"Yes", replied the officer, "an order was issued some time ago that the practice must be stopped."

We immediately knew what the real situation was. The order had, no doubt, been officially issued, and would be found in the relevant file, and had been copied to higher level in Shillong. But most probably no steps had been taken, or could be taken, to enforce the order! This particular officer was most capable and most helpful to us, and he was not to blame: I mention this just to illustrate how difficult it is to implement wild life preservation in India. The legislation and rules and so on are all in existence, but the enforcement is very, very difficult — especially when tribal people are concerned.

We contacted the son of the head man of Jatinga, which is a Jaintia village. This man was intelligent and educated, and had himself often participated in the killing of birds in a mysterious way which must be unique. I doubt if a similar phenomenon is found anywhere else in the world.

What happens is this. In a small area of hillside, about one square mile in extent and including the village of Jatinga, at a certain time of the year, and with certain weather conditions fulfilled, large numbers of birds come to Petromax lamps and other such lights exposed outside. These birds get killed by sticks and later eaten.

The whole thing is extraordinary, because it does not take place anywhere in the valley except at this particular spot. It has been tried out again and again in other places, without any success at all. To us the spot where it takes place did not appear to be any different from other places near by.

The following conditions must be fulfilled:

1. It must be some time between August 15th and October 31st.

September is the best month, though it was said that geese and ducks come in October.

2. There must be no moon. It only happens on really dark nights.

3. It must be foggy, cloudy or misty. If there is slight rain it will be even better.

4. The wind must be from south to north, otherwise no birds will come.

5. The lights must be bright and circular, not beamed like the light from an electric torch or car headlight.

6. An open space is better, though the birds will even enter a house under all the above conditions.

7. A small screen must be placed at the south side of each light, behind which a man stays to kill the birds, which come in from the north, the direction from which autumnal migration presumably takes place.

About fifty or sixty *Petromaxes* are put out when all the above conditions are fulfilled, and the best time is 7—10 p.m, though 2—4 a.m. can also be good. As many as 200 birds have been killed in one night by one man, and 500-600 birds are often killed in one night, and several thousands in a season.

It was now November, so we could not see the phenomenon actually in operation. But we saw the actual places where it had recently happened, and we collected a lot of feathers for identification at the Bombay Natural History Society's headquarters in Bombay.

Now comes the extraordinary information that the ten species so far identified by Salim Ali in Bombay are all local, resident birds and not migratory ones! These species are Malay bittern, little white egret, hill partridge, kalij pheasant, green pigeon, emerald dove, whitebreasted kingfisher, ruddy kingfisher, paradise flycatcher and necklaced laughing thrush. Only the first-mentioned bird is nocturnal: all the rest are diurnal.

A lot more investigation is needed, and here also is an opportunity for ringing of birds if any of the species do eventually turn out to be migratory. And in any case, an effort should be made by the authorities to try and stop, or at least restrict, this terrible and extraordinary slaughter of birds.

I asked our informant how long this had been going on and how it started. He said that his village consisted of Jaintias who had moved from the Jaintia Hills to Jatinga about the year 1895. In about 1905 one of their buffaloes was killed by a tiger during September, on a dark and misty night. They went out with lighted torches to look for the buffalo, and to their utter astonishment lots of birds came to them and settled on their heads, shoulders and arms. They naturally thought at the time that it was some kind of god-sent gift to compensate for the loss of the buffalo; but as the years passed by they found that it was a regular, seasonal and very local occurrence which only happened when certain conditions were

fulfilled. The introduction of Petromaxes in the early forties increased the numbers of birds attracted.

That this unique phenomenon actually occurs there can be no doubt at all. Many people from other parts have seen it, including the Sub-Divisional Officer himself; and in addition to the tell-tale feathers of that season's slaughter we were also shown many of the dead birds themselves which had been cooked or dried in the sun. We were also shown two pairs of beautiful emerald doves which had been mercifully spared and were being kept in cages, and I could not help thinking what strange tales and explanations would be forthcoming if only the dumb creatures had the power of speech.

There is another strange wild bird event which takes place every year in this part of the world. But in this case it is a very pleasing spectacle, in which there is no killing.

I am referring to the congregation every cold weather of thousands of wild duck on the small lake in the Alipore Zoological Garden, Calcutta, during the daytime (Pl. 42). These are lesser whistling teal, or "whistlers" as they are known, so called because of their shrill whistling notes.

Every year now, and for the last fifteen to twenty years, these wild duck take refuge on this lake in the huge city of Calcutta during the day only. Each evening they fly out to their feeding places in the country, and return in the early morning to their "sanctuary". They start coming in October, and by December there are about 4,000-6,000 of them. They depart in the spring, about April.

It really is a wonderful sight to see so many wild birds coming into the zoo of a large city for safety. Evidently they do so because the grasses and reeds of their swampy and watery feeding grounds dry up and get eaten by cattle, with the result that there is little cover or safety for them. About April the vegetation starts to grow again and they then again feel safe to stay outside the zoo. They nest about June or July in these parts.

Whilst on the subject of wildfowl, it is a regrettable fact that the migratory barheaded and eastern greylag geese (Col. pl. 12) and many species of migratory ducks which visit India each winter from the north are becoming fewer and fewer. This is not entirely due to shooting and netting, but is also probably due to other reasons, such as disturbance in their nesting areas, reduction of habitat and so on.

Of the resident ducks of India, it is sad to note that the beautiful and curious-looking pinkheaded duck is now almost certainly extinct. The last reliable record of this duck was from Bihar in 1935. Several reports of its existence since then may be due to it being confused with the redcrested

pochard. Nobody knows why it became extinct, and here is a chance for some field investigations. Though it has thrived in captivity, it completely failed to breed under such conditions.

Another resident duck, still found in the eastern parts of Assam, but very rare, is the whitewinged wood duck (Col. pl. 12). This is a very large bird which frequents patches of water in thick forest, and I have from time to time created publicity to try and prevent sportsmen and others from exterminating it. It has been known to breed in captivity (in Holland), and here is an opportunity for a good zoological garden in India to keep and breed these rare ducks.

The spotbill duck (Col. pl. 12), so called from the bright red spots at the base of the beak, occurs in most parts of India, usually keeping to itself and not associating with other ducks.

Nobody knows why the mountain quail, which used to be found at altitudes of 6,000 to 7,000 feet near Mussoorie and Naini Tal, has become extinct. The last known specimen came from near the latter hill station in 1876. Jerdon's courser has also vanished from India: the last authentic record of it was in 1900.

The bird which we are most worried about in India now is the great Indian bustard. As it is a large and spectacular bird and good to eat, and as it frequents open country where there are great pressures of human population and agriculture, protective measures are extremely difficult. I don't think these birds have ever bred in captivity so far, but I hope someone or some zoo will try. Creating a sanctuary for these birds may not in all cases be wise, because such a step would advertise their presence to poachers.

This unfortunate bird has sometimes been much maligned by the Press, when a sub-editor or a printer either accidentally or ignorantly mis-spells its name with an "a" instead of an "u". And I cannot forget an occasion when the correspondent of a well-known Calcutta daily interviewed me about preservation of wild life recently.

I urged on him the importance of spelling the word "bustard" correctly, and told him how the bird had sometimes been defamed in the Press. He promised to be most careful, and on the following day brought the draft of the interview neatly typed out. The bird was correctly spelt, and I breathed a sigh of relief.

Next day when the interview was published, there to my horror (and other people's great amusement!) were the words "great Indian custard"! After my letter of indignant protest to the editor, a naive reply came,

ending with, "Incidentally, I think it was fortunate that the name of the bird was changed to 'custard' and not to something whose pedigree was in doubt!"

I think that my favourite bird in India is the racket-tailed drongo or *bhimraj*. It is slightly smaller than the blackbird of Europe, and has a conspicuous crest, reddish eyes and two elongated tail feathers which are webless except at the ends. When in flight the bird looks as though it is being chased by two large bumble bees.

I have often had baby *bhimrajs* brought to me, and I have successfully reared them. They make the best, most devoted and most amusing of all bird pets. Even when they are grown up and able to fly away, they will not do so but follow their owner about, even for a mile or more, and always return to the bungalow. They cannot talk, but can mimic most whistles and noises — especially those of other birds.

For talking, the best birds in India are the hill mynahs. These become very tame and amenable to captivity. They are to be found in cages on the veranda of many a home throughout the country, and they can mimic human speech in a most entertaining manner. Many a time has a servant brought tea or cold drinks — at the "orders" of the mynah. I remember once a *syce* (groom) brought the horse duly saddled and ready for riding, though no order had been given by the *sahib*!

Tea garden labourers and villagers often ransack wild birds' nests and take the young fledglings to the bazaar. I used to rescue quite a number of these young victims, rear them up and then let them fly away if they wanted to. Often they did not want to leave, as in the case of the *bhimrajs*. I remember a couple of great stone plovers, which I reared to freedom, used to fly away for hours on end but always returned to the lawn of my bungalow — until eventually they decided to leave me altogether.

I have even kept and reared a whitebacked vulture. It was spotlessly clean, and spent a lot of its time in preening its feathers and sun-bathing. One can learn quite a lot about the habits and behaviour of birds by rearing their young to maturity.

Talking about vultures, I remember a discussion in the papers some thirty years ago about whether they find their food by sight or by smell. At the great height at which they soar, they obviously could not discover a carcass by smell. Very keen-sighted, they are always on the lookout for movements of crows, kites and pariah dogs, which do the locating of a dead animal. Then the vultures spiral down to the feast.

In the case of a carcass which has been dead for some time and which is being eaten by crows and dogs, the vultures lose no time in feeding — after

the dogs have finished. But when a cow or such animal has only just died and is intact, vultures perform a peculiar "goose-step ceremony" (Pl. 42).

The main body of the birds will remain on the ground some distance away from the newly-dead animal, and two or three of them will cautiously approach, doing a slow sort of goose-step. At each step, each bird's foot is raised, as though ready to strike. When these leading birds reach the carcass, they very warily commence feeding at the posterior end. The other birds still wait till all this ceremonial is finished, before rushing in to feed. It is an amazing sight. I have only seen it twice in my life, and I presume it is done as a precaution against the animal not really being dead.

The Dancing Deer

A famous place in the old days for geese and duck shooting, was the Logtak Lake in Manipur. Manipur is situated between the Naga Hills of India and Burma, and used to be a small princely state. It now has the status of a Union Territory of India. Not much shooting is done there nowadays, I think, owing to the very high cost of .12-bore cartridges.

At a corner of this large lake lives a very rare and extremely elegant deer — the brow-antlered deer (Pl. 47). It is so called because the brow tines of its antlers sweep forwards and the beams backwards in a continuous, graceful curve. It officially became "extinct" in 1951, but a few years later was reported to be still existing in this very swampy area of tall grasses and reeds. I had always been interested in the preservation of this rare deer, and very much welcomed the chance to go there and investigate. The I.U.C.N. sponsored my visit and the I.B.W.L. gave me moral support.

There are three sub-species of this deer: this one in Manipur, another one in Burma said to be becoming rarer each year, and a third one in Thailand and other parts of south-east Asia reported to be very nearly extinct. We in India are responsible for the survival of the first-mentioned, which the Manipuris call *sangai*, or "the animal that looks at you."

Accordingly I set out for Manipur by road in October 1959, and motored up the Brahmaputra valley and then through the Naga Hills to Manipur, where I was received by the courteous and co-operative Chief Forest Officer. After collecting all the information I could in Imphal, the capital, I then moved on to the south-west corner of the Logtak Lake to start my field study.

The first thing I found was that the ten-square-mile "swamp", in which the deer live, is not an ordinary swamp. It is a floating one, consisting of a thick mat of humus and dead vegetation which actually floats on the water of the lake. About one-fifth of this mat is above, and four-fifths are below, the surface of the water. And on the mat grow reeds and grasses up to fifteen feet in height. This mat of humus is called *phumdi* by the Manipuris,

and its thickness varies from a few inches to about five feet.

When you walk on this *phumdi* it moves and shakes; and if you disappear through it into the black oozy water underneath, you know you have trodden where its thickness is only a few inches! The deer, by living there for thousands of years, have developed slightly splayed-out hooves; and their pasterns are hairless and horny so that they can walk with them bent down on the reeds and grasses and not sink through the *phumdi*.

There are floating islands on lakes in Kashmir, Burma and North America that I have heard of, but I think that KEIBUL LAMJAO in Manipur in north-east India is the only floating wild life sanctuary in the world.

The Forest Department of Manipur has cut a channel through the *phumdi* to a small hillock which commands a good view of the sanctuary. As deer can only be seen from here in the early morning and late evening, and as it took two hours to come here from the Rest House, I decided to sleep for a night on this hillock.

The Forest staff and local villagers strongly advised me against this.

"Wild pig will give trouble, and the mosquitoes are very bad," they said.

"I am not afraid of either of these," I replied. Then they played their trump card:

"The place is haunted by evil spirits," they warned me. "You cannot stay here at night."

"I want to see these evil spirits," I said.

I slept on the hillock that night, accompanied by three frightened persons whom I persuaded to risk their lives with me. We saw nothing all night, but in the very early morning we succeeded in catching glimpses of six brow-antlered deer and several pig.

The thickness of the vegetation at that time of the year made it very difficult to see the animals closely. So I decided to return again in March, when there is less grass.

After the three days of Dol Jatra festival were over in Assam, I returned to Manipur on a day in March 1961, presuming that all would be normal by then. How mistaken I was! I knew that Manipur is the home of dancing and gaiety, but I did not realise that instead of the three days of festivity done in India, the Manipuris do six!

I also did not think that I, of all people, would have to dance, or that I would see deer dancing on their floating sanctuary! But it turned out that way.

In Imphal, where I stayed the first night, everyone danced the *thabal chongba* or "moonlight jumping". There was no moon and no jumping: it consisted of a rhythmic step, with three or four variations, in which everyone enthusiastically took part. We all joined hands and performed the

steps to the loudspeaker strains of a local uniformed band. It lasted for four hours.

In the dark, early hours of the following morning a jeep took me to the sanctuary, thirty miles away. We boated along the channel cut through the *phumdi* just as the sun was rising, a circle of gorgeous red in a glittering, golden sky. From the observation hillock I espied with the aid of binoculars a pair of brow-antlered deer — a stag and a hind.

Then in another place were two hinds, each with a three-quarter-grown fawn. The mothers were grazing peacefully on the young grass which was sprouting from the *phumdi*. The two fawns were — could I believe my eyes? Yes, they were dancing! Round and round they went, this way and that way, heads up and heads down, out of sheer youthful exuberance.

Deer dancing on a floating sanctuary — a thing which could only happen in Manipur! What would the I.U.C.N. and other learned bodies think of me when I reported this? I felt certain that I would be discredited and that I would receive no more such assignments! But it really did happen.

With the aid of some twenty Manipuri villagers, we quietly beat a square quarter of a mile of sanctuary, out of which came four brow-antlered deer and ten pig. I carried on long and detailed conversations with Forest Staff and villagers, and eventually, after sifting all the information, came to the conclusion that there were probably about 100 brow-antlered deer, a few hog deer, and some 300 wild pig in this ten-square-mile sanctuary.

The journey back on the following day was delayed by several "road-blocks". I had been warned by the Forest Staff that people could not venture out along the road during the six days of the festival, due to girls stopping them. But I did not believe it.

But here it was in reality. A solid mass of prettily dressed girlhood barring our progress along the road, until I had obliged them with a small monetary present. Then another such "roadblock", and another. Sometimes they joined hands across the road, sometimes they stretched a rope across.

I gave cash the first time, but after that we had to force ourselves through relentlessly, as I am not sufficiently wealthy to purchase my passage so many times along the small road!

The Manipur sub-species of the brow-antlered deer is rare in its habitat and difficult to see. But fortunately all three sub-species do well in captivity. A small herd of four lives in the Calcutta Zoo, and a pair have recently gone to the New Delhi Zoo, from Manipur. The Burma kind is represented in the Rangoon Zoo, where there are now eleven; and the south-east Asian kind in the Paris Zoo — with a few of these in other European zoos.

The authorities of Manipur have undertaken to do their best to preserve these deer in their floating sanctuary, but it is good to know that parallel

precautions are being taken in zoological gardens to preserve them from extinction.

The first part of the following narrative is a story of the life of a young man, who was born in the year 1870, and who was educated at the University of Cambridge. He was a very bright student, and was very popular with his fellow students. He was also a very good athlete, and was a member of the University sports team. He was very fond of his studies, and was very diligent in his work. He was also a very good friend, and was very loyal to his friends. He was a very kind and generous person, and was always ready to help his friends in need. He was a very successful student, and was awarded a first-class degree in his final year. He was also a very good speaker, and was often called upon to give lectures and addresses. He was a very well-rounded person, and was very popular with everyone who knew him. He was a very good example of a young man who was dedicated to his studies and to his friends, and who was also a very good athlete and a very good speaker. He was a very successful student, and was awarded a first-class degree in his final year. He was also a very good speaker, and was often called upon to give lectures and addresses. He was a very well-rounded person, and was very popular with everyone who knew him. He was a very good example of a young man who was dedicated to his studies and to his friends, and who was also a very good athlete and a very good speaker.

The Buffalo of Manas

After dancing deer I clearly ought to talk about the more commonplace wild buffalo, but before I do so I must discuss some of the smaller and more remote reserves in eastern India, and here I would like to include the Andaman Islands.

The Andaman Islands are a very remote part of India, half-way between Calcutta and Malay, in the Bay of Bengal. I have never been there, but these islands cannot be omitted from a book on India's wild life because of a very interesting experiment.

Many years ago some chital were introduced into the Andamans which previously did not have many wild animals. These chital increased rapidly due to lack of predators, and were beginning to become a nuisance. So it was decided to introduce a couple of leopards to keep them under control. The word "couple" should be carefully noted: two females were sent there and released, for if a pair of these animals had been sent, they also might have increased too much and wiped out the deer.

Incidentally, how do chital and other members of the deer tribe react to feline predators? There are some who think that a deer lives in continual terror of being hunted and killed by a tiger or a leopard. But it is really doubtful if wild animals ever do suffer from apprehension of danger or death any more than you and I do when crossing a busy street in, say, London or Calcutta. We are aware of the danger, and we know that a number of us get killed each day by motor vehicles. We are alert, and cross the street carefully but without apprehension of death.

So, probably, feels the wild deer in the forest, provided that its freedom of movement is not restricted. Its reactions to danger are instinctive and instantaneous, and it is poised for flight at the least sign of a predator. But it does not suffer agonies of apprehension, nor does it panic when danger comes its way.

I once saw all this so well illustrated in the open plain of the Serengeti in Tanganyika. It was evening. Two lionesses and two large cubs, looking

very hungry and obviously intent on making a kill, came out of some thick grass. The wildebeeste, eland, gazelles and other antelopes continued to graze, totally unmoved by the close presence of their arch enemies. But there is no doubt that each one of them kept a watchful eye on the big cats so that not it, but some other, would provide the meal!

The position of the chital and the leopards in the Andamans is being carefully watched, so that a balance can be maintained. When I met the Chief Conservator of Forests of those islands, he told me that a third female leopard might have to be introduced, as the chital were still increasing. In February 1960 six pairs of spotbill ducks and eight pairs of peafowl were also introduced there.

Orissa has much fine scenery, and I have memories of a pleasant tour of the Simlipal Hills, of old Mayurbhanj State, in company with two helpful and hospitable Conservators. These hills reminded me of Kanha, except that nearly all the grassy valleys in the *sal* forest were occupied by villagers with their cattle and cultivations. Very little wild life was to be seen.

Again in the beautiful Satkosia gorge of the River Mahanadi, wild life has become scared and scarce. In the Angul forests near by we could only see gaur, sambar and chital at night, their eyes gleaming with bewilderment in the glare of the vehicle's spotlight.

There are a few wild buffalo still left in west and south Orissa, as well as in the adjoining areas of Andhra and Madhya Pradesh, near the Godavari river. Unless these can be protected, with some co-ordination between the three States concerned, they are doomed.

Bihar has a national park near HAZARIBAGH. This consists of what used to be private forests, which were over-exploited in every way. The Chief Conservator of Forests very kindly showed me round the place in 1957, and I could see that a praiseworthy effort was being made to protect the forests, develop the park and build up the numbers of wild life.

*

In West Bengal there is a fine sanctuary called JALDAPARA, where about forty to sixty rhino still exist. It was created in the early thirties, mainly due to the efforts of E.O. Shebbeare who has played a big part in the preservation of the Indian rhino. Shebbeare, after retirement from the highest post of the Forest Department in Bengal at the end of the thirties, went to Malaya as Game Warden, and now lives in retirement in Britain.

He was one of the "old school" of Forest Officers, who decided that work in the forest was preferable to paper work in the office. He went on two

Mount Everest expeditions. I am not sure if I fully believe stories about him attending functions, such as Government House ones, with a bootlace for a tie and without socks. But it is placed on record that he once "overdid it a bit" by actually wearing socks when the Governor of Bengal came to a tiger shoot, and that when questioned he rejoined, "Oh, you've got to cut a bit of dash on these occasions."

I do believe that, in those pre-jeep days, he used to march through a forest either on foot or on elephant-back, and not stop till he reached the other end. He would observe everything, condition of the trees, presence of wild life and all the fascinating things that are to be seen in forests. What a pity it is that the average present-day Forest Officer is smothered under masses of files and paper work, and prevented somehow from doing much work where it should be done — out of doors.

Shebbeare is still interested in wild life preservation in India and in other parts of the world, and in 1958 published one of the best books ever written on elephants — *Soondar Mooni*, the story of an Indian elephant.

I have been to Jaldapara Wild Life Sanctuary twice. This is a good sanctuary, with the large River Torsa rushing from the foothills of Bhutan through the middle of it. The jungle and the grass here are thicker than in Kaziranga, and rhino more difficult to find. I remember that on the second occasion that I went there, I went for miles on elephant-back with the local Circle Conservator and the D.F.O., and we all became rather dejected at seeing no rhino.

Then, after two or three hours of looking at nothing but tall elephant-grass and thick scrub jungle, we found ourselves very close to two rhino and then more rhino. Our dejection very quickly changed to exhilaration. I hear that it is now much easier to see rhino there, as the authorities have done more burning of the grass and scrub forest. Herbivorous animals do better and are more easily seen in places where the grass is short, than in tree and grass jungles which are allowed to grow unchecked.

The Conservator who showed me round Jaldapara on that occasion was V. S. Rao, who later became Inspector General of Forests, New Delhi. Rao is very concerned about wild life preservation, but I think he finds it hard to achieve as much as he would like to in this direction, due to constitutional difficulties and owing to the immensity of the task of saving wild life and wild life places in a country whose population is 440 million.

To the east of Bengal and its main sanctuary Jaldapara are the Rivers Sankosh and Manas (Col. pl. 9) in Assam. These two large rivers, like the Torsa, debouch from the Himalayan foothills of Bhutan and spill widely into the plains. The area on both sides of the MANAS river forms one of the best sanctuaries of India, where both plentiful wild life and magnificent

scenery are found together — a rare occurrence anywhere in the world.

Overlooking the River Manas, which has legendary association with the goddess Manasa, is the Forest Rest House at Motharguri, where the road ends at the foothills. A walk of half a mile upstream from the Rest House brings you to a viewpoint, from which you can see the spectacular gorge of the river and range upon range of the lower hills of the eastern Himalayas in Bhutan. Just below the Rest House the main river bifurcates into two — the Manas (on the west side) and the Beki (on the east side). These two again split into many smaller channels, which sometimes rejoin and form islands.

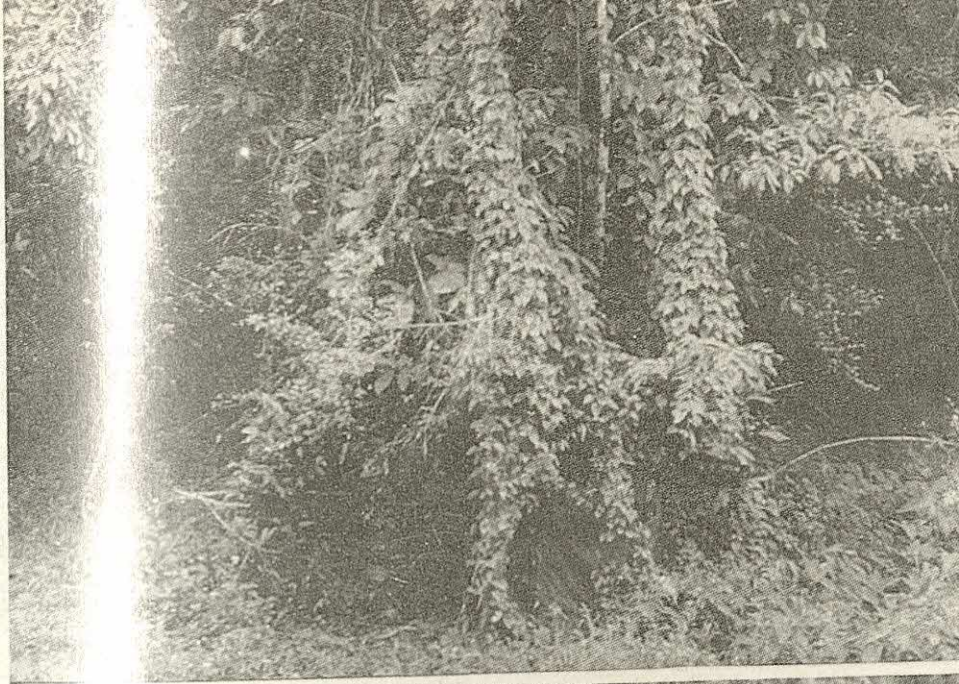
The sanctuary consists of 105 square miles of river beds, grasslands and mixed forest south of the Bhutan boundary. In Bhutan, north of the boundary, the hills are thickly forested and unoccupied (so far) by villages. Wild elephants, gaur, sambar and other animals roam freely from Assam into Bhutan and back.

What a splendid opportunity for Bhutan, an independent state but very closely linked by a special treaty with India, to create a sanctuary on her (northern) side of the boundary! The two adjacent sanctuaries could then form an inter-state park of superlative value, to the mutual benefit of both sides. I have been making this proposal to the Governments of Assam, of India and of Bhutan for several years now; and my idea is always listened to sympathetically — but nothing has been done! A few years hence it may be too late to do this, for settlers with their axes, hoes, and cattle may move in at any time. . . .

A few chital exist in this north-western part of Assam, and extend as far east as the Dhunsiri river in Darrang District. They have never been found in the rest of Assam, where the forest is not deciduous but mostly evergreen and very dense. Those who think they may have seen chital in other parts of Assam are probably confusing them with the young and sub-adults of hog deer, which are also beautifully spotted before they attain the dark brown coats of maturity.

A peculiar little creature which lives in the dense forests of north-east India is the slow loris (Pl. 49). It is usually solitary, or in pairs. Fluffy and grey-buff in colour with a dark brown stripe down its back, it moves about at night eating leaves, fruit and insects. During the daytime it curls up into a ball and sleeps, thus becoming known in local languages as the "shame-faced cat", though it is a lemur.

It has a very powerful grip, and its feet never let go of a branch until its hands have got a firm hold. Its large lustrous eyes are emphasised by brown circles round them, and must be the envy of many a film star. In



41a. A cloth hide well camouflaged in the forest
b. A barking deer buck photographed from the above hide



42a. Wild whistling teal seek the safety of the Calcutta Zoo lake during the daytime in winter

b. The leading whitebacked vulture doing the 'goose-step' ceremony



43. This solitary wild bull buffalo had killed eight or nine domestic bull buffaloes

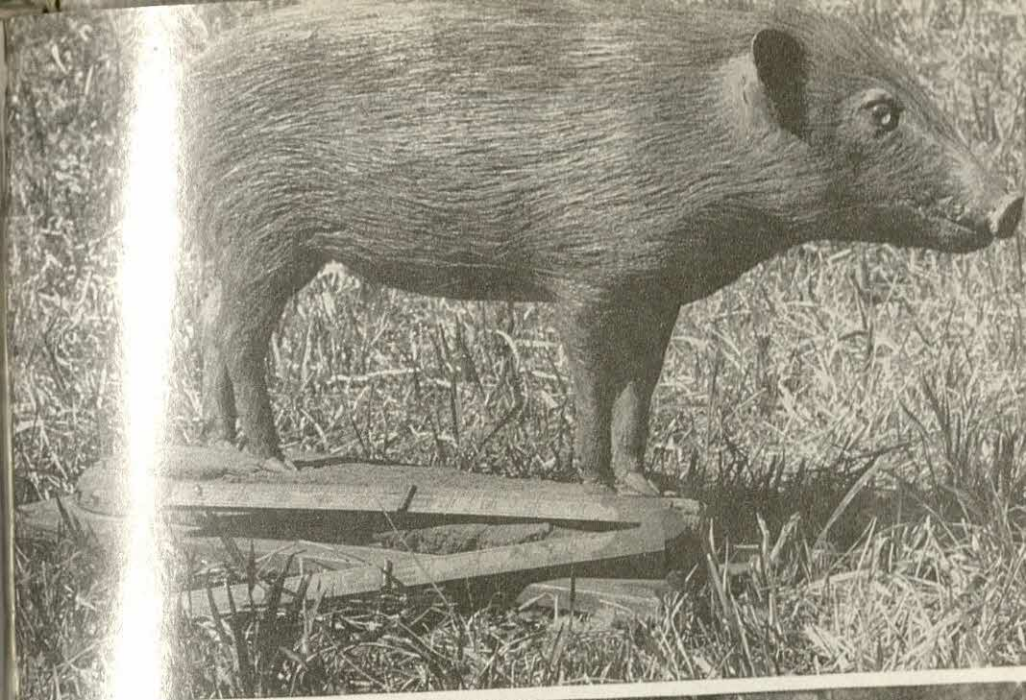




44 and 45. Herds of wild buffalo are difficult to approach closely
for they are very wary



46a. Brow-antlered deer hind and fawn on their floating sanctuary
b. At great expense this canal had been cut through the floating grass



47a. A fully grown pygmy hog (note footrule)
 This creature is thought to be now extinct
 b. Brow-antlered deer from Manipur in the Calcutta Zoo



48. Sambar occasionally leave their forest haunts for an open pool

south India and Ceylon it is replaced by a slightly less beautiful animal — the slender loris, which is rather lean and lanky.

There are hardly any rhino left in the Manas Sanctuary. There used to be many, but this being a remote corner of Assam it has always been difficult to stop the local villagers from poaching. I think there are only about ten to fifteen rhino left here now, with two or three more near the Sankosh river. Wild elephants are usually encountered in this sanctuary, and tigers are sometimes seen.

Wild buffaloes (Pl. 44-45) are the animals for which the Manas is justly famous. These animals grow bigger and carry larger horns than the wild buffalo of other parts of India. The cows have longer horns, the bulls thicker ones.

These wild buffalo of Assam, and of the part of India where Orissa, Madhya Pradesh and Andhra meet, are genuinely wild ones — the ancestors of the domestic water buffalo. They are not feral (or animals which were once domesticated but which have since returned to a wild state) like the ones of Ceylon, northern Australia and some other parts of the world. The domestic buffalo of Assam are rather similar to the wild ones due to admixture of wild blood, but slightly smaller. In other parts of India, domestic buffaloes are often totally different in conformation due to many centuries of selective breeding for the best milking strains.

Whenever you find herds of wild buffaloes, you will also find solitary wild bulls which enter the grazing grounds of the domestic animals, to mate with the domestic cow buffaloes. Where this happens, the herdsmen, are not able to keep a domestic bull buffalo at all, for it would instantly be killed by the more powerful wild one. I know of a case where a wild bull killed eight or nine domestic ones (Pl. 43).

Consequently all the domestic cow buffaloes are served by wild bulls wherever the latter exist, and the resultant mixed offspring is larger and stronger than the purely domestic calves.

Whenever I happen to pass through grazing grounds adjacent to sanctuaries where wild buffaloes exist, I always try to find out whether the herdsmen like this admixture of wild blood in their buffaloes. The answers are often conflicting and inconclusive, but I think it is true to say that, although a stronger and larger calf is thus produced, there are the disadvantages of a reduced milk supply in cows, and difficulty in handling or making use of male animals for ploughing or pulling carts.

Wild buffaloes in herds are very wary and difficult to approach closely for photography. They are not at all dangerous, as a general rule. But solitary wild bulls are usually bad-tempered, frequently due to having been harassed by disgruntled herdsmen. I have often been charged by one while

on elephant-back in Kaziranga; but if the *mahout* can make his elephant stand firm, the wild buffalo will stop short or else thunder past, avoiding a head-on clash. I have only once been charged by a buffalo when I was on foot, and I was fortunate to escape in good time.

The best plan to adopt when one is on foot, in order to approach a solitary wild bull buffalo, is to enlist the help of a herdsman with a small herd of domestic she-buffaloes. You then go along with the tame buffalo and can get very close to the wild bull — which appears to be flattered by the company of the domestic ones and remains completely docile so long as it is surrounded by the ladies!

Sportsmen who have done a lot of shooting of wild buffalo have often written about the presence of a younger bull with the large one they are hunting. This younger bull is known as the *chela*, or the companion and pupil of the older animal. But in all my experience of solitary wild bull buffalo in Assam, I have myself never seen a *chela*: the wild bull has invariably been all by himself.

Riding elephants are available here in the Manas Sanctuary, and are useful for going into the thicker parts away from the river and for seeing gaur, sambar and barking deer. But the best way to see the sanctuary is to float ten miles downstream in a rubber boat. On the wide sandy and shingly beaches of the Manas and Beki rivers and their many grass-fringed channels, you can see plenty of wild buffalo, hog deer, wild dog and perhaps a tiger. Your jeep or car meets you down below to bring you and the collapsible boat back to the Rest House.

Another animal frequently seen when you are on the river is the otter. It is fascinating to watch these most active and interesting creatures diving and twisting in the water in pursuit of fish, or playing, or simply basking in the sun. The sight of them always brings back to me memories of an otter which I once kept as a pet in my early days in tea: it used to play with my dog and cat and always accompanied me on my walks, running ahead and stopping at any place where the path bifurcated or crossed another — waiting to see which way I was going before scampering off again in front of me.

The method of seeing the sanctuary by going downstream in a rubber boat is particularly useful to followers of Izaak Walton. For fishing by rod and line is allowed, even encouraged, here on the same principle as it is permitted in the national parks of North America: the catching and removal of a few fish by sportsmen does not alter the visible attractions of the sanctuary, as would the killing of animals and birds. Moreover the slight reduction of numbers of fish in a river increases the food supply for those which are not caught (including those proverbial "big ones which get

away"!).

It is the bombing, dynamiting, poisoning and wholesale netting of fish that are not only illegal but also most unethical and an offence against society. For such mass destruction of fish is a terrible wastage, and brings advantage to only a few persons, while the majority are deprived of a valuable natural resource.

The fish to be caught by rod and line here in the cold weather are *mahseer* (sometimes loosely referred to as the "Indian salmon"), and *bokar* or *catli*. Sometimes a fish known as the "Indian trout" is caught in these rivers of north-east India, of small size with steel-blue spots on its flanks.

Mahseer up to 40 lb. in weight have been caught in the Manas by spinning with a spoon, but much larger ones probably exist. The record for the Brahmaputra valley is, I believe, 56 lb.: in southern India the biggest one ever caught is 121 lb. *Bokar* or *catli* are caught up to 12-15 lb. though heavier ones have sometimes been claimed by fishermen not particularly noted for accurate statements! How many fishermen can be believed, anyway? I myself, however, claim to be an exception to the general run of anglers who are sometimes classed with Ananias. Perhaps it is because I am too unimaginative. I remember once catching a *mahseer* and actually *under-estimating* its weight: the result was that my two companions gleefully exclaimed that I would never, never make a fisherman!

Fisherman or no fisherman, I have spent some of the happiest days of my life by the side of a crystal-clear, fast-flowing river in some beautiful part of India. In such surroundings I am bent equally on enjoying the very peaceful and harmless recreation of angling and on just drinking in the glorious solitude and serenity of unspoilt nature, where "every prospect pleases, and only man is vile."

(Incidentally, I have been told that the hymn, from which the above lines are quoted, was written by Bishop Heber in Colombo harbour, after the local people had lost all his luggage, but I do not know if this is true!)

And what a wealth of bird life can be seen on the Manas and Beki rivers! Most prominent, perhaps, are the pelicans which wisely wing their way upstream and float downstream fishing all the way, till it is time to fly up the foothills again. Large flocks of cormorants fly hither and thither, now and then settling on some stretch of water for feeding. Little egrets often fly up and down the river in large flocks.

A duck nearly always seen on the Manas in the cold weather is the redbreasted merganser, and some ibis will also usually pay a visit to the shingly beaches in the winter months. But the sight I like best is that of countless large pied hornbills which fly into the gorge of the river. These quaint-looking birds come here to roost at sunset during the last week of

February and during March and April of each year, and every tree on the steep hillsides seems weighed down with them. They depart in the morning. I wonder if this noisy but wonderful congregation of hornbills only at roosting time and only during these months of the year is a sociable prelude to their pairing and nesting?

Tigers have sometimes rested in the Forest Rest House of the Corbett National Park; and near the Manas Wild Life Sanctuary is a Rest House in which a wild bear once stayed. Shortly afterwards a Forest Officer stopped there while on tour, and found the place none too clean. Being of an imaginative turn of mind, he wrote in the remarks column of the Rest House register, "As the bungalow had previously been occupied by Brother Bruin, I had a lot of cleaning up to do."

At the end of the financial year the accounts of the Forest Division and relevant supporting books found the Audit Department less imaginative. "It appears," wrote an official of that Department, "that the previous occupant did not enter name, designation and duration of stay in the book, and that he paid no rent. The rent should be realised from this occupant."

Another Audit story concerns a zoological garden which had a surplus number of magpies. Some of them were disposed of and the proceeds duly credited to the zoo's account. A small expense had been incurred in selling these surplus birds, so an entry was made on the debit side, "For retailing magpies — Rs. 4." Subsequently two objections came from Audit: "An explanation should have been given as to how these magpies lost their tails," and "It is not understood why the retailing of these magpies was not done by the zoo staff themselves."

Discovery of the Golden Langur

Two small animals, which used to be found all along the base of the HIMALAYAN FOOTHILLS from Uttar Pradesh to Assam, are now feared to be extinct or nearly so. These are the hispid hare and the pygmy hog.

The hispid hare is so called because of its shaggy, bristly fur. In size it is about the same as the common hare, but its ears are shorter, giving it a rabbit-like appearance. It was sometimes known as the "Assam rabbit". In Sterndale's *Mammalia of India* it is described as follows: "... small eyes, comparatively short hind-legs, and harsh, even bristly, fur much mixed with long black hairs and of a general dark rusty grey or brown in colour above, dirty white below, with the tail altogether brown. Size about equal to the common hare, but the ears less than three inches, and tail about two inches."

I have not heard of this hare existing since Shebbeare's time. He says he found it "not uncommon in parts of the Goalpara Forest Division, Assam, when I served there from 1907 to 1911. They lived mainly in *ulu* grass ... i.e., thatch three or four feet high which at that time covered considerable stretches of the drier grasslands." Shebbeare goes on to say that he found very few, onle one that he can be positive about, in Buxa Division of West Bengal, wither he was transferred in 1911. There are cases of one having been shot in northern Uttar Pradesh in 1926, 1930, 1938 and 1951; and one was collected by a German team near the Sankosh river in north-west Assam in 1956.

I have never come across one myself, and have recently been trying to get some tea planters and others in that area interested in the subject — in case the creature still exists.

The pygmy hog (Pl. 47) used to be fairly common in much the same habitat as the hispid hare was found. I have met sportsmen who say they have seen it as recently as ten or twelve years ago, both west and east of the Manas Sanctuary.

This tiny wild pig is similar to its larger cousin, but even the adults never grow bigger than about ten inches high at the shoulder. The female has only three pairs of teats instead of the usual six. As in the case of the hispid hare, I am trying hard to find out if it still exists. It would be a great pity if these two creatures have been irretrievably lost.

Although no such animal as a *yeti* or a *buru* has yet been found, in spite of many expeditions and a lot of publicity, yet a new kind of langur has recently been discovered near the foothills of the very same region in which the *yeti* and *buru* were sought.

This new monkey is the golden langur (Col. pl. 9). As it was supposed to have been discovered by me, it was named by the Zoological Survey of India as *Presbytis geei*, or Gee's langur.

For a number of years there had been reports of a cream-coloured langur on the east bank of the Sankosh river, near Jamduar which is close to the India-Bhutan border. The first news of the existence of this animal came from E. O. Shebbeare in 1907, but no photographic record and no live or dead specimen were obtained for examination.

In 1947 a sportsman called C. G. Baron, who was also a bit of a naturalist and photographer, saw these langurs, and wrote in the visitors' book of the Rest House, "I saw some white monkeys (langurs) . . . and so far as I know they are an unidentified species. The whole body and tail is one colour — a light silvery-gold, somewhat like the hair of a blonde." The following year another sportsman wrote in the visitors' book that he "saw Sankosh cream langurs."

From time to time in the late forties and early fifties I had been told about the existence of these cream-coloured langurs near the Sankosh river. So I decided to visit Jamduar and find out if these monkeys were a new species or not.

Accordingly I went to Jamduar in November 1953, and was delighted to find two troupes of these golden langurs on the east side of the river, close to Bhutan. They were very pale chestnut in colour, as it was then winter. I found out later that the colour varies at different seasons of the year: the golden or light chestnut colour of the cold weather pales into creamy-white with the advent of the hot weather in March.

I photographed these exquisitely beautiful langurs both with still and ciné cameras, and spent many days in watching them. The larger troupe consisted of thirty to forty animals, and the smaller one had about fifteen members. A third troupe was seen by my friends while they were fishing downstream.

One day while I was following the langurs of the large troupe as they played and fed in the tree tops, and when I was in the middle of filming

them, a huge male swung down branch by branch till it was only a few feet away. It glared at me menacingly, before returning to the tree tops. I presumed this was a feint attack to scare me away, so I stayed perfectly still, just where I was. They seemed to be harmless and timid creatures, and I learned later that they never raid the rice crops as the common and very familiar rhesus monkeys do.

Next year I was in London and reported the existence of these langurs to Dr. W. C. Osman Hill of the Zoological Society of London, and he told me he thought that they might be a new species.

In January 1955 we had a meeting of our I.B.W.L. in Calcutta, and I showed my ciné film of these langurs to the members of Government House. Dr. S. L. Hora, then Director of the Zoological Survey of India, was present and showed keen interest in my film and my news of this langur. At my request he instructed his Survey Party to visit the area to investigate and collect some specimens.

This Survey Party, headed by H. Khajuria, duly collected six specimens, one of which was subsequently donated at my request to the British Museum. In his official description of this langur as a new species, Khajuria very kindly named it *Presbytis geei*, which I gratefully (but very humbly) acknowledge!

Baron had reported, and the local D.F.O. had confirmed, that this golden langur also existed farther eastwards, on the west bank of the Manas river. But although I had twice camped at the Manas in 1949 and 1952, and although I had seen plenty of capped langurs on the east side of that river, I had not seen any golden ones there. So I undertook an expedition to all that part of N. W. Assam in the cold weather of 1959-60, sponsored by the Bombay Natural History Society.

I first revisited Jamduar on the Sankosh river. On my way there, while still about forty miles from my destination, I found that the road ended suddenly. This is a thing which often happens in India: a bridge washed away by the monsoon rains, and a diversion through or over the river not yet made. Inquiries revealed that I would have to go by another and longer road, a forest track used for extracting timber, by which I could get back on to the main road the other side of the river.

As the contractor's timber lorries were using this forest road, I presumed that it would be motorable. But it was early in the cold weather, the ground was still soft, and the lorries had made deep ruts, some of which had been loosely filled up and covered over with brushwood. Again and again my Land-Rover and trailer got well and truly stuck. Again and again I and my three men had to dismount and push the vehicle and trailer through the black oozing mud.

This went on for some time, until it was nearly dark. Then came the

worst bit of road and the vehicle and trailer got bogged down over the axles in deep ruts. We could not move them. The situation looked desperate, and it really was a nightmare journey. Not a soul was in sight to help us.

At that moment I could hardly believe my eyes when I saw a khaki-clad Forester with a gang of forest labourers returning from work. In no time at all we unhitched the trailer and dragged both it and the Land-Rover through the bad parts of the road. Thence it was only half a mile to the Bamba Rest House, which was situated on the same small river over which the bridge had been washed away lower down.

I offered the Forester some money for distributing to the labourers who had helped me.

"No, thank you, sir," he said. "It is our duty to help such persons as you."

After appropriate expressions of gratitude, I inquired the name of the river because of which I had endured so much hardship.

"This is the Hel river," he replied.

That night I showed to the Forester and others the colour pictures I had brought with me, of the golden langur, the capped langur and the common langur — all of which are totally different in colouration. I explained to them how the common langur is silvery grey with just a touch sometimes of light yellow, and how the capped langur has some rufous brown on it as well as grey and is so called because of the "cap" of black hair on its head. I was then able to collect a lot of local information, including the news that there were about ten troupes of golden langur in that vicinity, and none of the other two species.

Next morning I continued my journey to the main road and onwards to Jamduar without further incident. Eleven delightful days were then spent, watching and filming the six troupes of golden langurs which I found there. Young babies of about two or three months old were seen, clasping tightly to their mothers' breasts, which confirms that the young are born in August and September. When very small, the babies are much lighter in colour than the adults, almost white in fact. With the help of the Forest Staff I noted down the names of the various trees in which the langurs were feeding.

Thence I continued my journey to the Manas Sanctuary, to the Rest House at Motharguri, to see if I could find any trace of golden langurs on the west bank of that river, as reported by Baron and others.

Crossing over to the west bank of the large river in my flimsy, collapsible rubber boat, I searched in the forest with the help of several men. We found a troupe variously estimated at twenty to forty langurs, and of the golden kind. But they were very wary, and the forest was much thicker and rougher than at the Sankosh, so we gave up trying to follow and

photograph them.

I saw once again lots and lots of capped langurs on the east side of the river. Then one day while I was fishing just above Motharguri I espied seven golden langurs on the west bank, near the water's edge. They were on the rocks, eating something. So I crossed over in the rubber boat and examined the spot. It was a sort of salt-lick.

My cloth "hide" did not take long to erect, and a watch was kept at this spot every day from 11 a.m. to 3 p.m., the time when the langurs were believed to come to the salt-lick. Three days later the seven langurs, including a lighter-coloured baby, came and ate salty earth. Two of them drank water also. It was most exciting to observe them at close quarters.

I estimate the total population of golden langurs in that area in which they are known to exist, along the Bhutan border and between the Sankosh and Manas rivers, to be about 550.

The above area is, of course, well to the north of the huge Brahmaputra. But there have been several reports of these langurs also existing south of the Brahmaputra, in the lower parts of the Khasi and Garo Hills. So I determined to visit this area also.

I toured along the Khasi and Garo foothills in March and April of 1960, searched with my three men at all suitable places, and showed the colour pictures to everyone concerned. We saw capped langurs, and no golden ones; but I am convinced that a few golden ones do actually exist in these hills, and I am determined to continue my efforts to verify the reports of these having been seen round here.

Although I found no golden langur on this trip, I did find another rare animal — also golden. While in a bazaar on my return from the Garo Hills, I visited a small animal dealer in order to inquire whether he had any news of langurs. In his house were baby hoolocks, several kinds of civet kittens, some young Indian jungle cats, and a new and strange kitten the like of which I had never seen before.

I instantly and excitedly recognised it as a kitten of the very rare and extremely handsome Temminck's, or golden, cat (Col. pl. 10). Unfortunately the dealer also knew that it was rare, and was trying to sell it in Calcutta. So it took me quite a long time to persuade him to part with it — for quite a fair-sized amount of money.

Tishi, as I called my golden cat, grew up from a tiny, fluffy brown kitten into a large and magnificent creature. He lived in my cottage in Shillong for nearly a year, and was devoted to me. As he had probably never known his wild mother, so young was he when brought from the jungle, he seemed to adopt me as his mother and loved to "suckle" the lobes of my ears and go

through the motions of feeding by treading with his paws when sitting on my lap, even when three-quarters grown.

He was free to come and go as he pleased during the day time, and if I was not available for him to play with he would disappear for hours on end into the forest down the hillside. But he invariably came back when called. A cat "of two worlds", docile and affectionate with me but potentially savage in the forest and nearby villages.

In the wild state golden cats grow to about four feet two inches in length, and prey on sheep, goats and even buffalo calves, as well as on birds and small mammals.

When he became fairly big, about three feet nine inches, and very powerful with sharp claws and teeth, I became worried in case he would get into trouble and meet sudden death from the hands of some neighbouring Khasi villager. These Khasis are very good marksmen with bows and arrows.

In parts of Africa it might have been possible to release such an animal, and let it return to a genuinely wild state. But in India, with its dense human population and scarcity of wild natural "food", this would not have been possible. Tishi would be certain to be killed by somebody sooner or later. I considered sending Tishi somewhere in India, but all the zoos of this country are in the plains, and the Darjeeling high elevation zoological park was not ready.

I was then due to go on another of my expeditions to south India. So I reluctantly made all arrangements and presented Tishi to the London Zoo, where he now lives — much admired by all who see him.

Shortly after Tishi's arrival in London by a B.O.A.C. Comet, I was delighted to receive a letter from Dr. Desmond Morris, Curator of Mammals, in which he said, "Tishi has settled in splendidly and is in marvellous condition. He is a superb exhibit. . . . We have already recorded a television programme . . . in which Tishi featured and I must say he looked magnificent. . . ."

Even more pleasure was derived by me from a letter written to me by one of my small nieces, who said, "We went to the zoo and saw your golden cat, he was beautiful and he played with my plait through the bars of the cage. I think he almost realised we knew his master as he came when we called him."

It was good to know that the animal, to which I had become so attached, was happy in his new surroundings. I do not think there are any other golden cats in any zoo in Europe. There were two of them in Calcutta Zoo when I was last there, and I hear that a whole family of them lives in the Brookfield Zoo of Chicago.

Whilst on the subject of wild cats, I have not heard any report of the

present existence of the rusty-spotted cat¹ in south India or of the marbled cat of Nepal and north-east India, and it would be a great shame if they have become extinct. The caracal of north and north-west India has become very rare, I believe, and all efforts should be made to preserve it.

Three cats are still quite common, at any rate in north-east India: the fishing cat (which does not appear ever to have been seen to catch or eat fish!), the common grey-coloured Indian jungle cat and the very handsome little leopard cat (Col. pl. 11). The latter's kittens are often found and brought to bungalows, and are notorious for being unbelievably ferocious and very difficult to tame. But if obtained young and properly looked after, leopard cats can become very delightful and devoted pets, and I have known several to become so well house-trained that (believe it or not!) they voluntarily and regularly used the water closet of the bathroom in the correct manner! I think that no other cat in the world, either wild or domestic, can do this!

Golden langurs do not exist in any zoo in the world. All species of langurs are difficult to keep in captivity, and the golden one would naturally be more difficult because it has not yet been fully studied and not enough is known about its feeding habits. In 1957-8 two of these langurs were sent to the Gauhati Zoo in Assam, but lived only for a short time. If they could be kept in an enclosure large enough to contain some of the trees in which they feed in their wild state, then I think they would survive — if the right kinds of food were given.

I went to Gauhati to see and photograph the surviving golden langur, after one of them had died. It was brought from its cage, placed on the grass and given something to eat. I was using a reflex camera, and when I focused on the creature there was nothing to be seen. It had disappeared! Again and again it was coaxed back on to the grass, and each time I tried to focus it disappeared from the ground-glass screen of the camera.

It disappeared from view each time by taking one flying leap on to my shoulders! With its hands on my head, it was also peering down at the reflex camera: a really charming and confiding subject, but what a difficult one to photograph!

A planter friend of mine once reared two baby golden langurs, which became very tame. After three months the male died, and the female gradually became very friendly with his tame male hoolock, which had just lost its mate.

The female langur and the male hoolock became close companions, and

1 Only just recently I have heard that the rusty-spotted cat has been found in north-west India, in Gujarat State. The Maharaja of Bansda, in whose former state the cat occurs, has promised to try and get it protected and to obtain kittens for keeping in captivity.

roamed about in the nearby forest together, coming back regularly to the bungalow to sleep or for food. After one and a half years the langur had fully grown up and finally stayed away in the forest. It was believed to have paired off with a common langur, for this all happened in the *terai* of Darjeeling District, where there are no wild golden langurs.

The habitat of the golden langurs between the Sankosh and Manas rivers is shared by both India and Bhutan, and this is an additional reason why I have been anxious that the Government of Bhutan should create a wild life sanctuary on their side of the border, adjacent to and north of the Manas Sanctuary of Assam.

Every year when the heavy rains, heat and high humidity of the monsoon months cease, and give way to that dry, cool weather of the winter for which northern India is so famous, my thoughts turn to the clear, fast-flowing rapids of the Sankosh and Manas with their backdrop of towering, thickly forested foothills. I long to be camping there again, far removed from the artificialities of civilisation and "progress".

I can think of no part of the world which can boast of greater scenic enchantment combined with rich and varied wild life than this strip of Himalayan foothills — especially where the magnificent rivers debouch from their gorges and spill far and wide on to the shingle and sand of the plains.

This spot could well be described as the answer to the fisherman's prayer and the artist's dream, and the so-far-unrealised hope of the wild life conservationist.

And I cannot think of a more engaging and more wonderful wild creature than the "newly-discovered" golden langur, as it feeds, plays and leaps from branch to branch in the tree tops, making the silvery-green leaves quiver against an azure sky.

The Rhino of Kaziranga

The history of the Indian rhino (Pl. 51-56) is also the story of the changing vegetation and climate of this sub-continent. Rhino existed during the Mohenjo-Daro era about 5,000 years ago, in the plains of the Indus river in what is now West Pakistan. Some rhino seals, relics of that ancient civilisation, are preserved in the Indian National Museum, New Delhi (Pl. 50). That region was then green and fertile: it lost most of its natural vegetation due to cutting and over-grazing by the local population, as happened in many parts of North Africa and the Middle East. The climate there has also gradually changed.

It is recorded that the invading Emperor Timur hunted and killed many rhino on the frontier of Kashmir in A.D. 1398. In the sixteenth century there were rhino in parts of the west of the sub-continent, and as far north-west as Peshawar. In his memoirs the Emperor Babur describes how he hunted rhino in bush country near the Indus as late as 1519. About that time the King of Cambay (in western India) sent a rhino as a present to the King of Portugal, and this was shipped from Goa. This was the first Indian rhino ever to be seen in Europe, for the ones brought to Egypt, Greece and Rome in ancient times were most probably African white rhino, from the Nilotic Sudan.

Partly due to capturing and killing, and partly due to the clearing of their habitat for settlement, cultivation and grazing, the rhino gradually disappeared in the west. Even in the Ganges valley rhino became extinct during the nineteenth century. By 1900 they only survived in southern Nepal, northern Bihar, northern Bengal and Assam.

The Brahmaputra valley in Assam in the last century was mostly covered with thick grass and jungle. Then came the tea industry, with labourers imported from other parts of India; and a lot of clearing was done for opening up of plantations. At the end of the century the railway into Assam was constructed, and vast numbers of settlers and graziers entered the valley. Wild life gradually became scarcer, and in particular the rhino

was very much hunted by sportsmen and poachers alike.

A special reason for the persecution of the rhino is the fanciful belief in the wonderful properties of its horn. The rhino horn is not really horn at all, but consists of compressed or agglutinated "hair"; or, more scientifically, keratin fibres cemented together in a hard compact mass. It is not fixed to the skull, like the antlers of a deer which grow on pedicles, or like the horns of an ox or antelope which grow on central cores of bone connected to the skull, but is epidermal and rests in the flesh and can be knocked off by a hard blow. When a rhino's horn is thus struck off, the wound bleeds profusely but within a year a new horn will start to grow there.

Medical properties have long been attributed to the rhino's horn. It was supposed to be a good insurance against poison, as it was believed that a drinking cup carved from rhino horn (Pl. 50) would split in twain if poison was added to the contents! Another belief was that a drink served in such a cup would start frothing if poison had been added! Kings in eastern Asia, therefore, used such drinking cups, one or two of which are still preserved in museums and elsewhere.

Even now rhino horn finds a ready market in eastern Asia, especially in China, as an alleged aphrodisiac for "restoring lost manly vigour"! Thirty years ago it used to be worth half its weight in gold: now it is priced even higher. At a recent auction in Gauhati which I heard of, a party of Bombay merchants came in a chartered plane, and purchased the whole lot at Rs. 2,525 (about £189) per lb.! The present price of African rhino horn in East Africa is only £2 10s. per lb.

The Survival Service Commission of I.U.C.N. has for some time been considering the possibility of putting some kind of artificial "substitute" for powdered rhino horn on the market in large quantities, to forestall the demand for real rhino horn at the expense of the few surviving animals. But I think this idea has now been dropped on the grounds that it would be most unethical to put such a spurious "drug" on to the market however worthy the ultimate objective might be.

I understand that tests made in chemical research laboratories in Basle (Switzerland) have conclusively shown that rhino horn has no biochemical or hormonal properties whatever. Investigations as to its potential effects as an irritant, I believe, show that any possible temporary results would be offset by injurious side effects.

Another fanciful belief in some parts of eastern Asia was that a rhino horn placed under the bed of a woman at the time of childbirth would assist her in her labour! Persons owning a horn would rent it out to expectant mothers for the equivalent of about £30 each time! Yet another absurd belief was that a rhino horn left to soak in a filled bucket turned the water into a sort of elixir of life, of which members of a family would sip a

spoonful every day!

It certainly seems extraordinary that, even in this space age of science and technology, such absurd beliefs still persist. It is to be hoped that there is some truth in the report that legislation has now been introduced in China prohibiting the use of rhino horn for alleged aphrodisiacal and other "benefits".

Cow rhino in India carry horns as big as seen on bulls, in fact the sexes are almost indistinguishable at first sight. The record horn of an Indian rhino, in the British Museum, is twenty-four inches. The largest I have ever seen in Kaziranga is one of eighteen inches recovered by the Forest Staff from an old animal which had died, and I have seen and photographed one of an estimated length of sixteen inches on a live rhino. The average horn to be seen in Kaziranga would be about eight inches, I think.

Apart from the horn, almost any part of the body of a rhino can be marketed. Even the urine is drunk by some persons, tiny pieces of hide and bone are worn as charms against sickness, and the meat is believed by some to be not only palatable but also a combined passport and ticket to the land of eternal bliss!

One of the last unspoilt and unoccupied grassy areas of the Brahmaputra valley was the one which is now KAZIRANGA WILD LIFE SANCTUARY. It stretches for some twenty-five miles along the southern bank of that huge river, just to the north of the Mikir Hills in the centre of Assam. It was a sportsman's and poachers' paradise until 1908 when it was realised by the authorities that there were only about a dozen rhino left.

After being constituted as a Forest Reserve and closed to shooting, Kaziranga became a "Game Sanctuary" in 1926. And in the late 1940s its name was officially altered to "Wild Life Sanctuary" because the word "game" refers to those animals and birds which are shot for trophies and for meat, whereas the term "wild life" embraces all living creatures and implies their conservation.

In the early 1930s Kaziranga was a closed book, a sort of *terra incognita* completely left to itself by the Forest Department. I remember trying to get permission to go there in 1934, but the rather lame excuse of the British D.F.O. was, "No one can enter the place. It is all swamps and leeches and even elephants cannot go there." Shortly afterwards the very fine Chief Conservator, A. J. W. Milroy, thought otherwise, and decided to clean up the poaching which had recently started again and to open up the sanctuary for visitors.

I have talked to the Forest Officer who was the first to be deputed to survey Kaziranga in the mid-1930s. He found poachers' camps at every *bheel* (small lake), and about forty carcasses of rhino with the horns

removed. The Mikirs, the simple, peaceful but very interesting tribal folk who dwell in the Mikir Hills just on the southern boundary of the sanctuary, were among the many poachers. And when they ran away from the Forest Staff their "tails" (the ends of their embroidered loin-cloths) were caught hold of by the pursuers. The Mikirs would then draw out their sharp chopper knives and cut off their own "tails" to facilitate their escape.

When Kaziranga was opened to visitors in the year 1938, I was one of the first to go and see it. Two friends and the Range Officer accompanied me, and we had a most exciting time on our two riding elephants. When I first saw rhino, they appeared to be most improbable-looking and prehistoric-like with their quaint features and thick armour-plating. Our party carried two rifles, one on each elephant, for "self-defence", but this practice of taking defensive weapons into a sanctuary was soon discontinued, and since then I have never taken a rifle or gun with me in self-defence at any time anywhere in India.

Rhino were then unused to seeing human visitors, and often their reaction was to charge those intruding into their haunts. At that time the Forest riding elephants were not trained to stand their ground in the face of a charging rhino. Their instinct was to turn tail and flee; and as the *mahouts* felt likewise, the result was sometimes headlong flight through the tall grass for a mile or so. I remember writing my remark in the visitors' book, "Twice charged by rhino, and the elephants each time bolted for some distance."

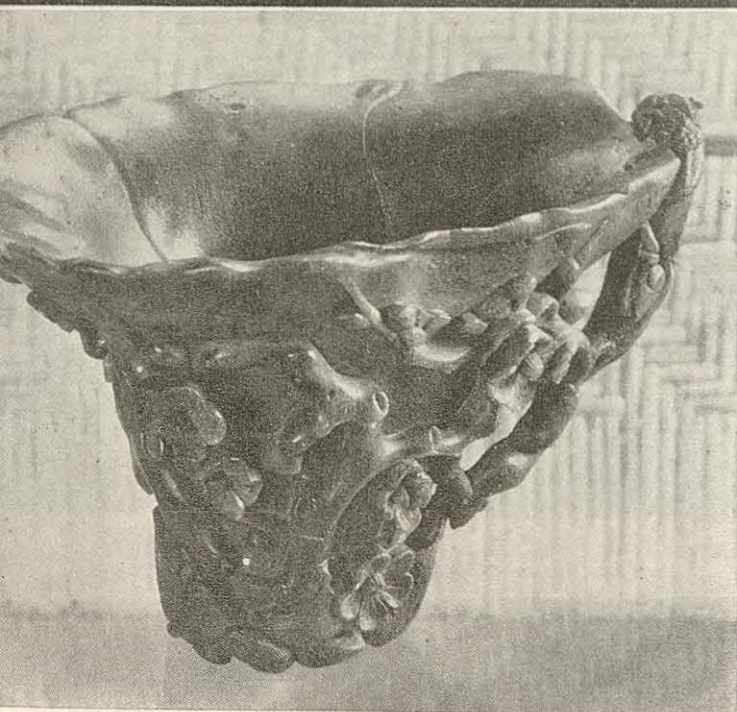
A few months later some planter friends of mine visited the sanctuary, by which time the rhino of that vicinity had become more accustomed to visitors. After paying the fees for entering the sanctuary and for riding elephants, they wrote in the same remarks column, "Rather disappointing. Charged only by the Forest Department!"

Nowadays the rhino which inhabit the areas frequently entered by visitors on elephant-back are "well-behaved" and rarely charge unless there is a cow with a young calf. In the other parts of the sanctuary, however, where visitors seldom go, one is liable to be charged. But the elephants are now staunch and trained to stand their ground, and in any case a charging rhino will very rarely press home its attack. Nearly always it suddenly stops short, wheels round and eventually trots away, snorting all the time.

On the very rare occasion when a rhino actually presses home its charge at a riding elephant, or attacks a man on foot, it does not use its horn as a weapon of offence. Unlike African rhino, the Indian rhino has never been seen to use its horn thus: instead it uses the tushes (large incisor teeth) in its upper and lower jaw, especially the latter, and bites its victim with an upward thrust of the head. Consequently the lower tush nearest to the



49. A pair of slow lorises
(note their firm grip with hands as well as feet)



50a. Imprint of a rhino seal of the Mohenjo-Daro civilisation of about 5000 years ago

b. A drinking cup carved from a rhino horn



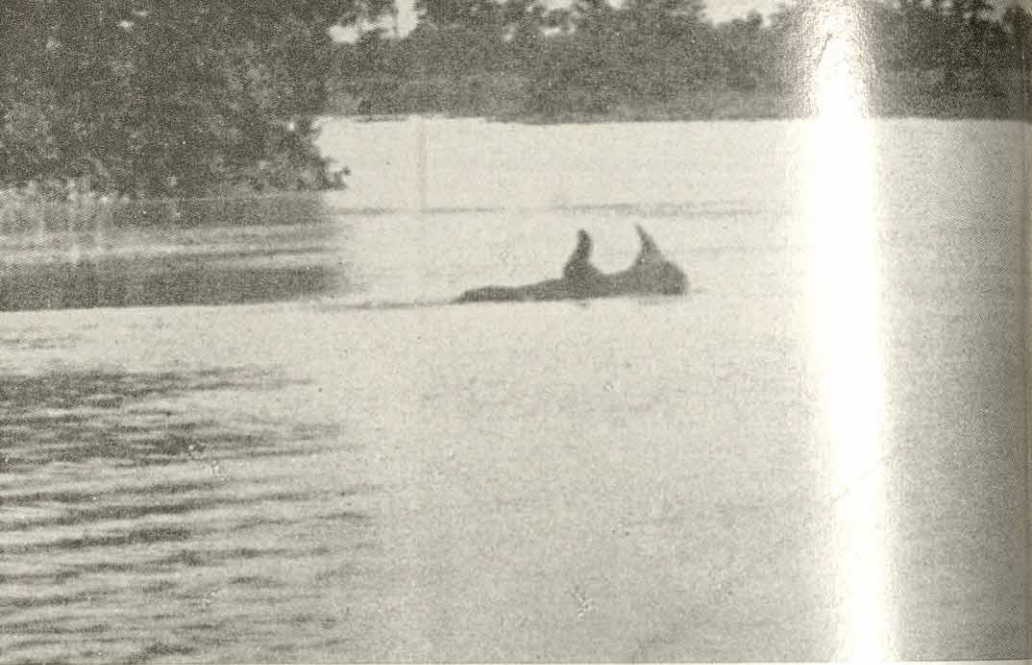
51a. The great Indian one-horned rhinoceros looks like
a relic of ancient times

b. This angry cow charged our elephant three times
in defence of her calf





52 and 53. This large bull returns quickly to its wallow of liquid mud



54a. Unique picture of a rhino swimming with only ears,
horn and nose above water

b. The calf nearly always precedes its mother



55a. Visitors cine-film a rhino in its wallow from the back of Akbar
 b. This cow rhino was warding off a tiger from her newly-born calf



56a. As the horn is intact, this rhino has probably died from some disease
b. The horn has been hacked from the skull of this rhino by poachers

victim will often make a single gash, which has given rise to the imaginary belief that it has used its horn. African rhino have shorter jaws and lack the powerful tusks of the Indian rhino.

Moreover I have never heard of an Indian rhino sharpening its horn, or even rubbing it, in the wild state, as African rhino do. So when you see an Indian rhino rubbing down its horn on the walls and iron bars of its enclosure in a zoo, it is probably because of parasites which cause itching and therefore rubbing. Ralph Graham, Assistant Director of the Brookfield Zoo in Chicago, found this out, and managed to cure his pair of Indian rhino of rubbing their horns by applying mud which had been suitably medicated for killing the parasites. After this treatment, the rhino stopped rubbing, and their horns grew properly.

In their wild state Indian rhino are nearly always found during the heat of the day resting in wet muddy wallows, a sure protection against external parasites, and against the flies which try to lay their eggs between the folds of the thickly armour-plated skin.

There is an old legend as to how the rhino got its armour-plating. Once upon a time Lord Krishna decided to give up elephants as battle animals, and to use the rhino, because *mahouts* were too easy a target for enemy archers. So a rhino was captured, dressed in armour and trained. But when the animal was brought before Lord Krishna, it was found that it was too stupid to learn and obey orders, so it was driven back to the forest — with its armour still on it. And so to this very day rhino still have on them the armour-plating of that particular animal.

As a matter of fact, rhino were actually used by some of the old kings in India as front line "tanks" in warfare. They had iron tridents fixed on to their horns when so used, and this implies a certain amount of training.

It is interesting to speculate whether the great Indian one-horned rhino, whose scientific name is *Rhinoceros unicornis*, was the origin of the legends of the unicorn. Certainly the ancient popular belief that the unicorn could detect poison by dipping its horn into a liquid tallies with the alleged magical properties of the rhino horn. Also the belief that the unicorn was the only animal that ventured to attack the elephant seems to have something in it.

Considering that both the elephant and the tiger are afraid of the rhino, this latter creature could with justification be termed "the king of beasts". A tiger will hunt a baby rhino and often succeeds in snatching away a very young one when the mother is off her guard. No single tiger would dare attack an adult rhino, as the following story shows.

In 1886 a certain "sportsman" went out on elephant-back in the area which is now Kaziranga to shoot rhino. He encountered one and fired about a dozen shots at it from very close range. The wounded rhino made

off, and as it was late in the evening the hunter returned to his camp. Next day he followed up the bloody trail of the badly wounded rhino and came across it while it was actually engaged in fighting and keeping off two tigers. "One tiger," the account says, "had his neck fearfully lacerated, evidently by the rhino's teeth; the other was also covered with blood." The "sportsman" fired at both tigers, which escaped, and then finished off the unfortunate rhino.

This episode demonstrated the boldness, powers of endurance and agility of the Indian rhino. It can easily outstrip an elephant, and can gallop, jump, twist and turn quickly — none of which things an elephant can do. For an elephant cannot run, but can only shuffle along at a fast walk at about twenty miles per hour; and an elephant cannot jump, in fact it cannot cross a crevice or ditch of more than six feet in width, which is the maximum length of its stride.

All of the world's five species of rhino, the two in Africa and the three in Asia, are in peril of becoming wiped out by man; and because of this danger a world committee has been appointed to try and save them from extinction.

The two African species are in less immediate danger: the African black (or hook-lipped) rhino are now believed to number 11,000 to 13,500 while the African white (or square-lipped) rhino are fewer, about 2,500 to 3,500. Both of these rhino are two-horned, and the former is a browser while the latter is a grazer like the Indian rhino.

The three Asiatic species are much fewer in numbers. My own estimate of the great Indian one-horned rhino is as follows: Nepal 185, Bengal 65 and Assam 375, making a total of 625. The Asiatic or Sumatran two-horned rhino are now believed to number about 170, mainly in Burma, Malaya and Sumatra, and there is a female of this species in the Copenhagen Zoo. The Javan or lesser one-horned rhino is now confined to the Udjong Kulon Reserve in western Java and number somewhere between 25 and 50. There are no Javan rhino in captivity anywhere.

In size the African white rhino is the largest. Then comes the Indian, and then the African black. Next comes the Javan, and smallest of all is the Sumatran. It is interesting to note that in the case of two grazing species, the African white and the Indian, when a mother and calf are on the move the baby goes ahead in front, while the mother follows behind — presumably as a precaution against a prowling lion (in Africa) or a tiger (in India) in grassy country (Pl. 54). This precaution would not be so necessary in the case of browsing rhino in scrub tree forest.

All three Asiatic species used to be found in India. The Javan lesser one-horned rhino was once "fairly common" in Bengal, especially in the

Sundarbans, but became extinct in India about 1900. The Sumatran two-horned rhino still existed in the Mizo (formerly Lushai) Hills of Assam up to about 1935 — when it was exterminated. Although this rhino is two-horned, the anterior horn is small, while the posterior one is often very insignificant indeed.

The great Indian one-horned rhino also would undoubtedly have ceased to exist, but for the strict protection given to it when its numbers fell to a very low level at the beginning of this century. What are the reasons why rhino cannot survive the battle of life? Some people say it is slow of hearing and short-sighted, but I am not so sure of this.

I myself think that it is generally slow-witted and foolhardy. Most wild animals in India instinctively run away from danger and seek concealment in thick cover. The blundering rhino does the opposite. It continues grazing till danger is quite close, and then instead of retreating and hiding it is liable to expose itself still more by charging. Also it has the habit of depositing its dung at certain fixed places, and a would-be slayer can wait for a rhino at one of these large dung heaps, to which the animal finally approaches backwards.

Some people have suggested that these rhino dung heaps may denote "territory", but I do not think so. I have observed that any rhino will deposit its excreta at any heap, and that rhino do not usually stay in a particular locality, but move about from place to place according to the availability of grazing. I think that individual animals, while passing near a dung heap, will decide by "association" to make use of it. Quite a number of other herbivorous animals deposit their droppings at particular spots, for example nilgai and other antelopes, without necessarily demarcating territory.

Although the rhino is a solitary creature, I have seen as many as seven of them all together in one wallow; but these came from different directions and departed from the wallow, when disturbed, in seven different directions. As an Indian poet has said:

"Fearing nothing, caring for nothing,
Wander alone, like the rhinoceros."

Several writers on animals have described the Indian rhino as only uttering one noise, a grunt! I have heard four noises: a roar or a bellow when newly captured, a snort when excited or disturbed, a grunt when not disturbed and a peculiar whistling sound at the time of courting and mating. I think it is the female which makes this whistling sound, while the male grunts; but I notice that several sportsman-writers of the old days have described a whistling noise made by a mortally wounded rhino.

A curious thing about Indian rhino is that old animals, mostly bulls, on reaching a stage at the end of their life when they can no longer defend

themselves against stronger ones, often "retire" to the edge of the sanctuary. They then sometimes live for years close to where villagers provide a certain amount of protection for them, because younger rhino will not venture outside the sanctuary in such a manner. These old rhino usually carry the ugly gashes of conflict when they first come; and later on become a welcome tourist attraction of Kaziranga because if no rhino can be seen in the sanctuary, a visitor can generally be certain of finding one of these old ones which can be approached very closely.

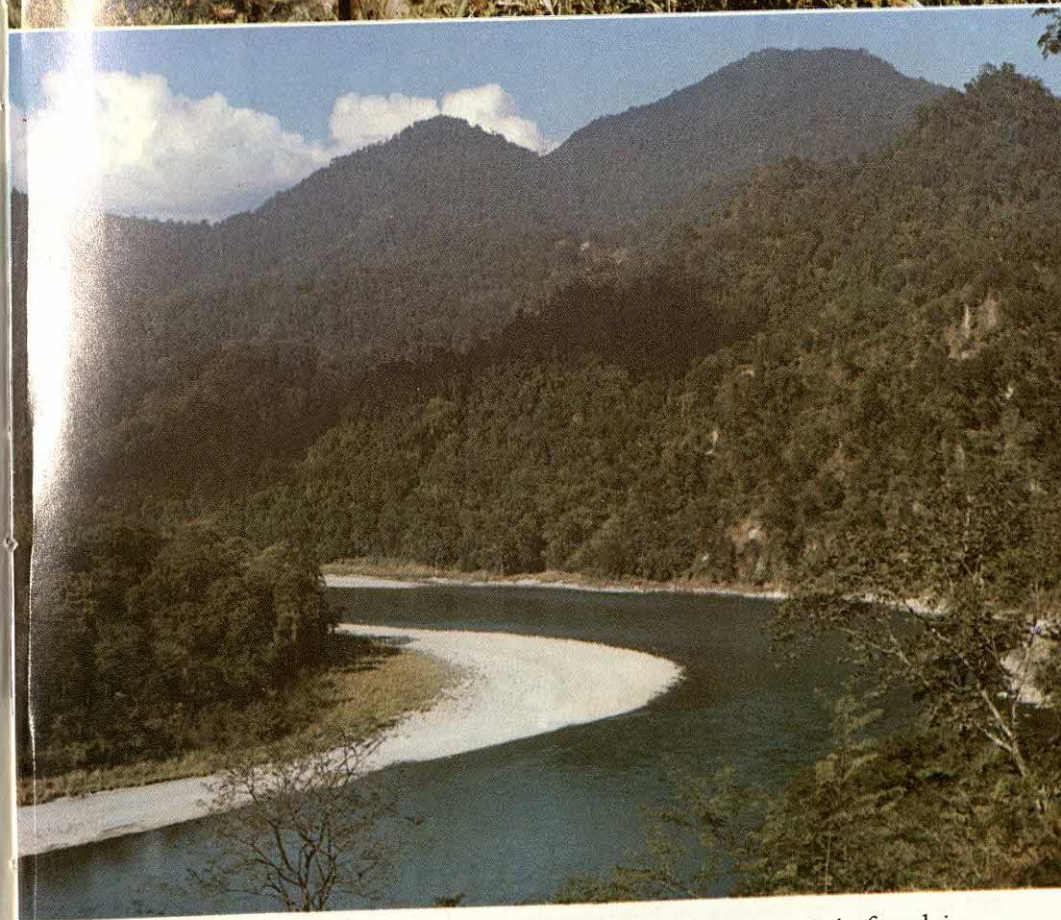
Perhaps the most famous of these old half-tame rhino was the *boorra goonda*, which was admired and photographed at close quarters by many thousands of visitors during the fourteen years he lived just outside the entrance to the sanctuary. I once photographed him on the ground at a distance of only nine feet from his nose with impunity, much to the disappointment of a certain professional TV cameraman who was hoping for a charge — at my expense!

The *boorra goonda*, "old big bull" in Assamese, died a peaceful natural death in 1953, and was much missed by all. But his place was soon taken by another "ousted" bull called *kan katta* or "cut ear"

A number of rhino have been sent from Kaziranga to zoological gardens in different parts of the world for exhibiting to the public. Among the very first were Mohan (in 1947) and Mohini (in 1952) which went to Whipsnade. I assisted in the arrangements and care of these two young animals from the time of their capture to their loading in the planes which flew them to Britain.

Rhino are captured by the pit system. A pit about ten feet long, five feet wide and six feet deep is dug in the middle of a much-used rhino path, and then thinly covered with sticks and grass to camouflage it. A rhino, sometimes a calf walking in front of its mother, falls and is later removed in a wheeled cage dragged by an elephant to a stockade, where it stays for about a month before being taken to its final destination. This is all done scientifically and humanely by experienced men of the Forest Department.

When first captured a rhino, like a newly caught wild elephant, will display a wildness and apparent ferocity which has to be seen to be believed. This is because it suddenly finds itself in a position in which it has never previously been and in which its freedom of movement is totally restricted. It is purely due to fear, and this is proved by the fact that newly captured rhino and elephants become remarkably tame within a few days. Once they find that they are being well treated, their fear quickly disappears. I will always remember how Mohini, a baby rhino, after a very short spell of savagery, became devotedly docile and used to lick my hands whenever possible!



9 The newly-discovered golden langur, *Presbytis geei*, is found in beautiful country between the rivers Sankosh and Manas (seen here)



10 The golden cat is one of the rarest and most handsome of the wild cats

Mohan and Mohini at Whipsnade and the pair at Basle in Switzerland have successfully, reared two and three calves in each place respectively, and have provided us with much valuable information about their breeding habits. This information is of particular use when interpreted in the light of what can be observed in the wide open spaces of Kaziranga.

For instance we now know that when we see one adult rhino chasing another, it is probably not a case of a stronger bull pursuing a weaker one, or of a bull trying to catch up with a cow. It is almost certainly a cow "in season" running after a "reluctant" bull! A cow rhino comes "into season" once every forty-six to forty-eight days throughout the year, unless it is served by a bull. Bull rhino are also believed to have periods when they are "in rut", and the "seasons" of both cow and bull must coincide before mating can take place. The gestation period is $16\frac{1}{4}$ - $16\frac{1}{2}$ months. A rhino probably lives as long as an elephant, about seventy years, though we have no definite proof of this yet.

For the last twenty-five years, ever since it was opened to the public, I have been visiting Kaziranga. I remember what it looked like before all the streams and *bheels* were invaded by that beautiful but terrible pest the water hyacinth. This was introduced into India from South America about fifty years ago as an ornamental plant. One tiny bit of it can spread over an area of 600 square yards in a few months, and it does incalculable damage. At first no animal in Kaziranga would touch it, except wild pig which grub up the roots in the dry weather. Nowadays elephants, rhino and buffalo sometimes eat a little of it, apparently with reluctance.

I have seen Kaziranga so many times when the strong, dry winds of February and March sweep the roaring man-lit fires through the elephant grass, leaving bare black patches of charred stalks. I have seen it often in April and May when the new freshly-growing grass attracts swamp deer and hog deer, now resplendent in their bright new summer coats.

I have boated through it during the peak floods of the monsoon months, and have secured what is probably the only photograph of a rhino swimming in deep water (Pl. 54). The time I like best of all, however, is the end of the monsoon, October and November, when the floods have receded and the rains with their heat and humidity give way to cool, sunny days. It is then that most of the many kinds of grasses and reeds burst into flower, and in the distance to the north can be clearly seen the snow-capped peaks of the Eastern Himalayas, over a hundred miles away.

During a visit on elephant-back there is always the chance of a thrill, when an angry or frightened rhino may snort and charge. It is equally exciting whether the *mahout* makes his elephant stand its ground and thus call the rhino's bluff, or whether the elephant turns tail and flees through the tall,

treeless grass, without any danger of overhead branches hitting you.

Apart from such minor thrills while on elephant-back, I can only recall two occasions on which I have had to retreat from a rhino when I happened to be on foot.

Rhino can be very dangerous, and every year a few people get killed by them. Because of this danger, visitors are not allowed to dismount from their riding elephant in the sanctuary, but being a person not without some experience and an Honorary Forest Officer I have always been given some latitude by a co-operative Forest Department.

The first occasion was when I was determined to secure one or two steady ciné shots of a rhino in an open place. An elephant is a most unsteady form of transport to do ciné photography from. Accordingly when I reached a dried-up *bheel* (small lake) where a large bull rhino was grazing on the short grass, I signalled to the *mahout* to stop and make the elephant kneel down. Then I and a man, whom I had brought to assist me with photographic equipment, dismounted and cautiously approached the rhino on foot with the ciné camera on its tripod.

When I got within "shooting" range, I placed the tripod in position and started to film the rhino, which was now slowly coming straight towards me. I sent the man back to the elephant, while I continued to film the oncoming beast at a closer range. As soon as the rhino more than filled the frame of the view-finder, I thought it was time for me to quit. There was no time to take the camera and tripod with me.

As I was nearing the elephant, I turned round to look back. There was the rhino closely examining my camera. I mounted the elephant the usual way by standing on its bent hind legs and climbing up the rope under its tail, and there was the rhino still very interested in my camera. It occurred to me that if it had known anything at all about how to use a ciné camera it could easily have obtained a very good shot of a man hurriedly scrambling on to the back of a frightened and trumpeting elephant!

The other occasion was when I was trying to photograph a pair of Pallas's fishing eagles at their nest high up in a *simul*, of Indian silk-cotton tree, in Kaziranga. I had built a *machan* about forty feet up another tree near by, so situated to make the best use of the morning sun from about 8.30 to 9.30 a.m. As there was usually a rhino of rather unpredictable temperament living in that neighbourhood, I had asked for an elephant to take me and my two men out there each morning, and bring us back a couple of hours later.

One morning the elephant did not turn up. I was in a quandary as to what to do. The sun was shining in a cloudless sky, and I could hear the eagles calling to each other with their loud and melodious *kooroo kooroo*. I just could not resist the temptation to risk a journey on foot to the site of

the lofty tree with its nest.

"The elephant has not come," I explained to my two men, "but I am willing to go there on foot. Are you willing to come with me, or do you want to remain here?"

"Where the *sahib* goes, we will also go," came the not unexpected reply.

We cautiously walked along the narrow track through the elephant grass, and I remember reflecting on how small and vulnerable we were and how very much higher than usual the fifteen-foot grass was. We reached the *simul* tree safely, and then followed an hour's photography. When the angle of the morning sun made further work impossible, it was time for the return journey through the tall grass.

We had not gone more than a hundred yards when there was a noise near by, and with a panicky "Rhino coming!" both my men, who were aged about twenty, disappeared down the track, seemingly breaking all Olympic records.

At their age I could have run even faster. But I knew that a rhino can soon catch up with the fastest of humans. However, I also started to try and escape. The track was wet and slippery and much depressed in places by three-toed rhino and large circular elephant footprints.

After about ten yards, I did the best possible thing I could have done. I slipped and fell down, flat on my face, with the rhino very close at hand. I knew that an Indian rhino, unlike a wild elephant, will not continue its attack on a fallen victim, and I quickly rolled sideways off the track into the grass and remained perfectly still.

The rhino thundered past. After about twenty minutes the grass parted and one of the men, who had come back by a long detour, asked if I was all right. We then together went along the track, on to the main road and called to the other man. After a long time he emerged, too frightened to talk. Then, at last, he described how he had eventually thrown himself into a thick clump of grass, and how the rhino had stood over him breathing heavily before going on its way.

A Wonderful Sunrise

While on the subject of Kaziranga, it is inevitable that elephants, both wild and domesticated, should crop up again! For wild elephants are nearly always to be found in the interior parts of Kaziranga, sometimes as many as 200 coming in from the Mikir Hills. And riding elephants are a necessary means of travelling in the thick "elephant grass" which grows to a height of some fifteen feet or more, often in ground which is swampy.

A famous riding elephant we had at Kaziranga for many years was the large tusker named Akbar (Pl. 55, 57). Many high-ranking people, including Governors of Assam, visited the sanctuary on this noble beast, which led the way and which was usually (not always!) staunch in the presence of an angry cow rhino with her calf. In fact Akbar had several times fought with a rhino which had pressed home its attack, kneeling down with trunk curled inwards to take the charge, as is the custom with elephants in such a predicament.

Because of its much heavier weight, a trained adult elephant can easily withstand the onslaught of a rhino should the latter actually press home its attack, which very rarely happens. But there is always the danger of the elephant's trunk, an extremely delicate and vulnerable organ, being gashed by the rhino's incisor teeth. I remember Akbar's trunk being badly cut on one occasion, but fortunately it healed up in a short time.

Akbar had killed at least three persons during his service with the Forest Department. In all three cases the person killed had "asked for it", and I remember the third case very clearly. The grass-cutter of another elephant had for some time been stealing the grain ration of Akbar, and one day Akbar could stand it no longer and chased the thief into a house and gored him to death. Immediately after this incident, Akbar's *mahout* went up to the huge beast, mounted it easily and rode it back to the elephant lines, as docile as ever.

Strangely enough, Akbar came on *musth* four days later, and I was very intrigued about this — whether the impending attack of *musth* had any-

thing to do with the killing incident. As soon as this spell of *musth* was over, I was the first person to ride on Akbar into the sanctuary, and I found him tractable and well behaved.

In my own early days of photography in Kaziranga, before I had acquired a telephoto lens, I sometimes used to dismount from Akbar and approach a rhino more closely on foot. Akbar used to follow and stand guard just beside me with his huge tusks, so potentially dangerous, only a few inches from my head, protecting me against a possible charge from the rhino. Sometimes he used to walk a few feet behind me as I struggled through the thick grass to film a moving rhino. Then, photography over, the huge beast would kneel down for me to mount him again.

This noble elephant died a natural death of old age in 1956, only six weeks after he had excelled himself by rushing at a wounded tiger in a nearby shoot and knocking it out with a well-placed kick, and two months after he had charged and fought a wild *makhna* (tuskless bull) in the sanctuary. The wounded tiger was killed outright by Akbar, and the wild *makhna* was vanquished after a five-minute fight.

As a rule, it is only solitary wild bull elephants which are liable to give trouble to a trained bull riding elephant when in the sanctuary. Wild elephants in herds do not generally cause any anxiety to visitors: in fact when on elephant-back it is sometimes possible to approach or even enter a wild herd, and often an inquisitive or friendly wild elephant will come up to the trained one and caress it with its trunk, apparently unaware of the dreaded human beings on its back!

The Forest Department maintains about eight or nine riding elephants at Kaziranga, both bulls and cows. Two of these, named Deokali and Parboti, are females of about seven feet six inches and seven feet four inches in height respectively. They look like any other female riding elephants, except that even a "layman" would notice that Deokali is much older than Parboti.

But there is quite a story behind these two elephants. Deokali is the mother, and Parboti is her daughter, though by now the "baby" is very nearly as big as her mother. And the story, or rather history of them, is as follows.

Deokali was the Forest riding elephant in the Doyang Reserved Forest, very close to the tea estate of which I used to be manager. In 1945 she disappeared into the forest and joined up with a wild herd. She remained in the wild state for four years, until in 1949 she and the herd with which she was living were captured by an elephant catching company in a stockade, in *khedda* operations. She was quickly recognised to be a *bon gharasia* or escaped-tame-one-run-wild, and was claimed back by the Forest

Department.

She returned to her former *mahout* and to her old job, and continued working for the Forest Department. Then on 6th February, 1950, she gave birth to Parboti, having apparently mated with a wild bull some twenty months previously.

News of the birth was brought to me, and as it was a garden holiday I went straight out to the place and photographed both mother and newly-born baby (Pl. 58). It then occurred to me that here was an opportunity to revisit the mother and baby every year on 6th February or the nearest possible date, and keep a record of the measurements of the circumference of the forefoot and height to the shoulder (the latter is almost exactly double the former in the case of Indian elephants).¹

This I have done (Pl. 59) every year except one, when I was away in south India, and in that year I asked the Range Officer to do it for me. From 1955 onwards both Deokali and Parboti have been stationed at Kaziranga as riding elephants for visitors. Parboti has been taking visitors into the sanctuary for about two years now.

So I have managed to obtain a unique record over a period of thirteen years of the growth gradient of an Indian elephant, which has been living under near-natural conditions in and near the forests of its homeland. And in addition to all this, I was fortunate enough to be able to observe and photograph a small herd of five wild elephants captured in a stockade in 1953 (Pl. 60-61).

This small herd of five captured wild elephants looked like any other — until closely studied. Then it could be seen that all of them were female: one large one and four others of successively smaller size down to a small calf. Then, after further scrutiny, it could be seen that it was a family party of mother and four calves of various ages. The eldest calf was badly deformed, with almost every bone in its back, legs and tail broken, and it had evidently survived only because of the devotion and protective care of its mother for ten to fifteen years — its variously estimated age.

The three small calves were duly roped by the professional noosers on *koonkies* (trained elephants used for catching operations), and taken to the training camp, where they were measured. The mother and deformed animal were released from the stockade, and I narrowly escaped being trampled to death by the former which angrily went to the rescue of her babies.

The age of these three calves could be estimated fairly accurately from the recorded measurements of Parboti, and their ages came to one year

1 A few extracts from the table of Parboti's height measurements are as follows: aged one 4 ft. 1 in., aged three 5 ft. 1 in., aged seven 6 ft. 1 1/2 in., aged eleven 7 ft. and aged thirteen 7 ft. 2 ins. (only 4 ins. less than her mother).

(four feet one inch in height), three years (five feet) and seven years (six feet two inches). This means that the interval between births in the wild state can be as little as two years, and goes to show how prolific elephants are: one cow elephant in her lifetime of, say, seventy years, could easily produce as many as twenty calves, or even slightly more.

Incidentally, the youngest calf of this captured herd was offered to me by the manager of the elephant catching company, at the current market rate of Rs. 1,500 (£112 10s.), because he knew that I had purchased a similar small female calf in 1949 and sent it by air to the London Zoo, where it was called Dumbo — the flying elephant, the first one ever to be flown by air.

I declined the offer, as I knew of no zoo which required a baby elephant at that moment. Imagine my surprise when I returned to my bungalow that evening and found a letter from the Director of the London Zoo asking me if I could possibly obtain a baby female elephant for them! In due course the baby was sent by air to that zoo where it still was when I was at home in 1963. Its name is Lakshmi (Pl. 62).

Kaziranga would not be what it is today but for the good work done by P. D. Stracey, a man of boundless energy, who took over in 1947 from the last British Chief Conservator of Forests in Assam. In fact I can think of no other Chief Conservator in India who has shown greater keenness in wild life than Stracey. As Director of Forest Education in Dehra Dun from 1954-60 he was able to have wild life and its management included in the curricula of the Forest Colleges. He also founded the Wild Life Preservation Society of India.

In the late forties much difficulty was experienced in finding a suitable Range Officer to take charge of a sanctuary, for Rangers with an aptitude for wild life as well as for their usual work of forestry are few and far between. I remember the following conversation with the Ranger in charge of Kaziranga about the year 1949.

"Is there any poaching going on in Kaziranga these days?" I asked.

"Poaching? How can there be poaching? This is a sanctuary, and my staff are posted everywhere!" he replied testily.

Whenever I hear this kind of reply, I know what the real truth is. Obviously the answer should have been something like, "Yes, there is some illegal shooting in and near the sanctuary, but we are doing our best to stop it." Within a few weeks of the above conversation, alarming news of widespread shooting of animals and netting of fish inside the sanctuary leaked out. Most, if not all, of the Forest Staff were reported to be involved. The Forest riding elephants which took visitors into the sanctuary by day for Rs.15 a time, were caught taking out poachers at night for Rs.50!

There was a good clean-up of personnel, and a new Ranger was brought

in. His name was R. C. Das, an ex-schoolmaster who had joined the Forest Department. He was a well-built, cheerful man with a keen interest in wild life. Under him, and with Stracey at the top and a young and efficient D.F.O. in charge of the Division, Kaziranga was then put right on the map as a well-administered sanctuary.

The tea estate on which I lived and worked was about fifty miles from Kaziranga, and I spent many Sundays and other leave days at the sanctuary. Invariably Das and I talked about the happenings and difficulties connected with the work of preserving wild life and keeping poachers out, and at the same time of maintaining good relations with the local inhabitants. And Das often came to visit me, in order to consult about urgent problems, or relevant items of natural history interest.

It was during Das's tenure of Kaziranga that the swamp deer, which had been almost wiped out by poaching, and the hog deer, which had declined very much in numbers, both increased considerably. Rhino poaching was stopped almost entirely. And the number of visitors from all parts of the world grew larger every year.

For his good work Das was promoted and subsequently transferred to another post. His most untimely death of a serious illness two years ago was a very, very great loss to the Forest Department of Assam. Whoever now is placed in charge of Kaziranga will have a wonderful opportunity not only of emulating the achievements of Das but also of ensuring that what is now a sanctuary becomes one of the best administered national parks of India.

It may seem strange that the task of wild life preservation is entrusted to the Forest Departments in India, and that there are no separate wild life departments. When this problem came up in 1952 it was decided to entrust this work to the Forest Departments of the various States because nearly all the wild life and sanctuaries of this country happen to be in the forests and other lands which are under the jurisdiction of the Forest Departments. To create another department to preserve wild life would lead to overlapping and unnecessary duplicating of work, and in any case it would be difficult to find the trained personnel for another department.

So the Officers and Subordinate Staff of the Forest Departments in India are entrusted with the task of preserving the fauna as well as the forests, and for this purpose there are Wild Life Divisions and special personnel within the Forest Departments, under the Chief Conservators of Forests, to deal with wild life matters.

Any description of India's wild life and wild areas will inevitably reveal many shortcomings of the Forest Personnel concerned, as may have been observed by readers of this book. At this juncture, therefore, I feel impelled to take the opportunity of paying my humble tribute to those members of



II The leopard cat, though fairly common, is very beautiful.
Above, an adult cat; below, a kitten



12a. Whitewinged wood duck
(very rare)



b. Spotbill duck



c. Chukor partridges



d. Eastern greylag geese,
winter visitors to India

the Forest Departments, both Officers and Subordinate Staff, who, like R. C. Das of Kaziranga, have dedicated themselves to the cause of preservation, in face of many difficulties — including dangerous poachers, trigger-happy "sportsmen" and unenlightened public opinion. I have accompanied many people into Kaziranga, including Governors and Ministers. One of the most interesting visitors whom I introduced to this sanctuary and its wild inhabitants was Dr. S. L. Hora, then Director of the Zoological Survey of India, in 1954. Although Dr. Hora, who was a specialist in fishes, lived and worked in the Indian Museum, he was a wholehearted and enthusiastic advocate of wild life preservation, and was the first Secretary-General of the I.B.W.L. His death in 1955 deprived India's wild life of one of its strongest champions.

He, with his scientific training, and I with my field experience often collaborated in writing suitable replies in the "Letters to the Editor" column of newspapers such as *The Statesman*, dealing with wild life matters. Now with me in Kaziranga and riding an elephant almost for the first time, he and I were trying out various methods of conducting a census of rhino by "random sampling" and by making "traverses" covering small sections of the sanctuary.

We could not devise any satisfactory method of doing such a census, because of the presence of so many areas of dense elephant grass. I had previously flown in a light aircraft four times up and down Kaziranga, and from the air it is equally impossible to attempt a count of animals. By knowing the approximate density of rhino population of the different parts of the 166-square-mile sanctuary, and after much familiarity with the subject, it is only possible to make a rough estimate of the numbers of rhino. My estimate for Kaziranga is 275 rhino, with sexes probably about equal in number.

My most vivid recollection of a visitor coming to see Kaziranga was a certain day in October. This is the time of the year when the rains are petering out, and one waits somewhat impatiently for those cloudless days which herald the cold weather. On the earliest of these clear days the visibility is the best in the whole year, enabling one to glimpse the magnificent sight of the Se La Range of the Eastern Himalayas, one hundred and ten miles away. These snows can only be seen on about twenty-five days each year.

Elaborate preparations were made to receive this distinguished visitor, but what concerned me most was: what would the weather be like on the day of his visit? For three weeks it had been continually cloudy and wet. . .

When this visitor was due to arrive, we were all waiting to receive him.

Several Ministers of the Assam Government, the senior officers of the Forest Department, the local Government Officers, a guard of honour of the Armed Police and a crowd of about five hundred were there.

Eventually the first of the procession of cars arrived at the Tourist Lodge, and I caught my first glimpse of Jawaharlal Nehru, India's undisputed leader and Prime Minister since Independence in 1947.

I was glad that I had been invited for this occasion, for I knew that Mr. Nehru was personally interested in animals and birds, and here was a chance to bring to his notice the seriousness of the situation in which India's wild life now finds itself. I was privileged to have tea with him and his daughter Indira Gandhi. General Thimayya and Feroze Gandhi were also at the small tea party. We talked about the sanctuary and its animals.

But what of the weather? It was still cloudy when I went to my tent that night. Just before dawn someone brought me a cup of tea, and before drinking it I looked out. The stars were beginning to fade in an absolutely cloudless sky.

On our way out to the sanctuary, and while on elephant-back (Pl.63) searching for rhino and other wild creatures, we were treated to the most magnificent sunrise I can ever remember. An "indirect" sunrise, for we did not look south-eastwards in the direction of the sun, which was rising behind the pleasantly-forested Mikir Hills. To the north we gazed, at the shining snow-capped peaks of Kangto ("Snowy Mass" in Tibetan), 23,255 feet, Chumo ("Venerable Lady") 22,707 feet and Nayegi Kansang ("Snow Country of Delight") 23,120 feet, as they changed colour from crimson to pearly pink, and then to golden white (Pl. 64).

It was characteristic of the "world's busiest Prime Minister" that, near the end of his visit, he left the throng of Ministers and Officers which surrounded him and came over to where I stood on the fringe of the crowd, to thank me for showing him some wild life.

"I have always been struck," he said, "by the unique combination of sub-tropical vegetation of this valley with the alpine or Himalayan snow-capped mountains." After a short chat and handshake, he rejoined the Ministers and others. His daughter then also left the many who surrounded her and came to say good-bye.

I met Mr. Nehru once again in New Delhi. I remember him telling a gathering of us wild life conservationists that what was most needed was "illustrated books on Indian animals for children." This is very true, for such books are almost non-existent in India, though so common in the bookshops of Western countries.

He is fond of animals and is fully aware of the need to save the last remnants of India's wild animals and birds in their wild haunts. I had previously written for the Indian Government a pamphlet entitled *Why*

Preserve Wild Life?, and he had contributed an introduction to it.

In it he said "... In no country is life valued in theory so much as in India, and many people would even hesitate to destroy the meanest or the most harmful of animals. But in practice we ignore the animal world. How many of our people know even the names of the less common birds? How few books we have about birds and animals? But life would become very dull and colourless if we did not have these magnificent animals and birds to look at. Our forests are essential for us from many points of view. Let us preserve them. As it is, we have destroyed them far too much. It is true that as population grows, the need for greater food production becomes necessary. But this should be by more intensive cultivation and not by destruction of the forests which play a vital part in the nation's economy. I welcome this pamphlet and I hope that it will lead people to think more kindly and more intently of our wild life."

On that day of the wonderful sunrise at Kaziranga, I could not help looking back on the past history of wild life preservation in India and thinking a little apprehensively about its future.

In the long history and culture of India, there is something of a tradition of nature conservation. Consider the measures described in the treatise on Statecraft called the *Artha Shastra*, attributed to Kautilya about 300 B.C., where certain forests "with game beasts open to all" were specially protected.

In these protected forests there was strict supervision and certain mammals, birds and fish were fully protected. If these animals became vicious, they were "to be entrapped or killed outside the sanctuary, so as not to disturb the rest. The extraction of timber, burning of charcoal, collection of grass, fuel and leaves, the cutting of cane and bamboo, trapping for fur skins and tooth and bone were all totally prohibited." Such forests were called *Abhayaranya*, and in some measure can claim to be the forerunners of the national parks of the modern era.

In 242 B.C. the Emperor Asoka's fifth pillar edict gave protection to fish, animals and forests.

Much later, under British rule, attempts were made in the various Provinces to preserve game, mainly in order to ensure the continuance of big and small game shooting. With the same object in view, an even greater amount of preservation was done by rulers of many of the princely states.

At the dawn of Independence in 1947, however, much of this good work was undone by the ordinary people who, suddenly realising that it was now they who owned the animals, often went out into the wild places and massacred whatever they could find. I have been told the story of how a jeep-load of hunters sallied forth in old Jaipur state and shot between seventy and eighty sambar in one night. Only one young one could be

brought home to eat.

It was five years after Independence before the Government of India could start to devote time to the task of wild life preservation; the Indian Board for Wild Life was constituted in November 1952.

Under the Constitution of India, "wild life" is a State and not a Central subject. The Centre and its advisory Indian Board for Wild Life can only recommend, co-ordinate and encourage: all the actual work of legislation, implementation and general wild life preservation has to be done by the States themselves.

The weakness of this set-up is that some States move forward at a slower rate than other States, depending chiefly on the amount of personal interest and energy displayed by the Forest Minister and the Chief Conservator of Forests of a State at any given time. The Wild Life Boards of the States are powerless and can only advise — if and when they are called on to do so. This is why India's small band of wild life enthusiasts, which includes Salim Ali, Dharmakumarsinhji, Krishnan and others (including myself), is continually trying to enlist the support of the public by way of articles in the Press and other means.

This kind of set-up also explains why some States have upgraded their best sanctuaries to the status of national parks, while some really good sanctuaries in other States have not yet become national parks. The I.B.W.L. at the Centre is endeavouring to ensure that only those sanctuaries, which are of real national value to the whole of India and to the rest of the world, should be constituted as national parks.

Since 1952 a great effort has been made both at the Centre and in the States to conserve the rapidly diminishing wild life, but this has not been enough to keep up with the continual and alarming increase in human population.

This increase is by far the greatest threat to wild animals, involving as it does the cutting of forests, the cultivation to land for food, and grazing by domestic stock. After all, 1.27 million square miles, which include sparse desert areas, the high Himalayas, and rain forests in the north-east, are populated by more than 440 million¹ people — most of whom are under-educated and under-nourished. The problem of preservation in India is therefore very different from that in Africa, Europe or America, where the main danger comes from "sportsmen". Bona fide sportsmen in India have, indeed, contributed a great deal to our knowledge of natural history and, indirectly, to game preservation. (These must not be confused with poachers, who recklessly and, alas, increasingly slaughter the country's edible animals.)

1 By the time this book reaches the public, it is feared that the figure of 440 million will have been greatly exceeded.

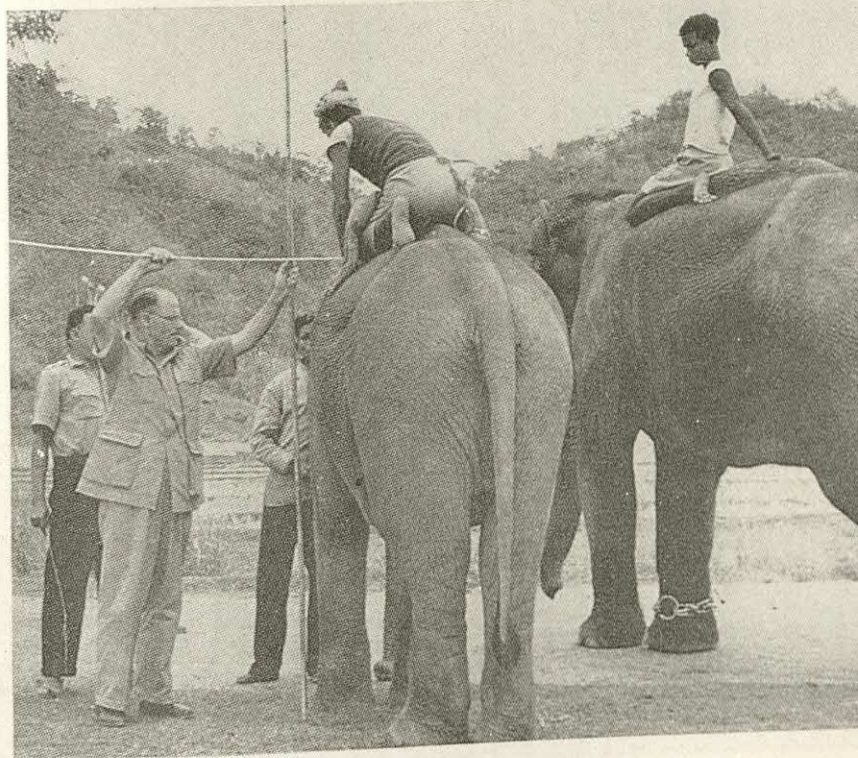
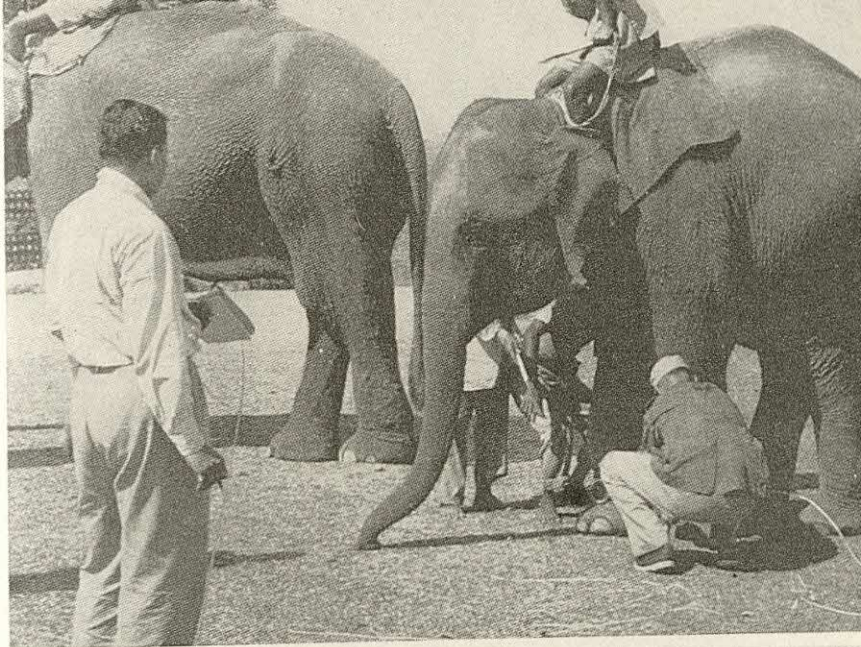


57. Akbar, followed by another elephant, is taking
a Governor of Assam into Kaziranga

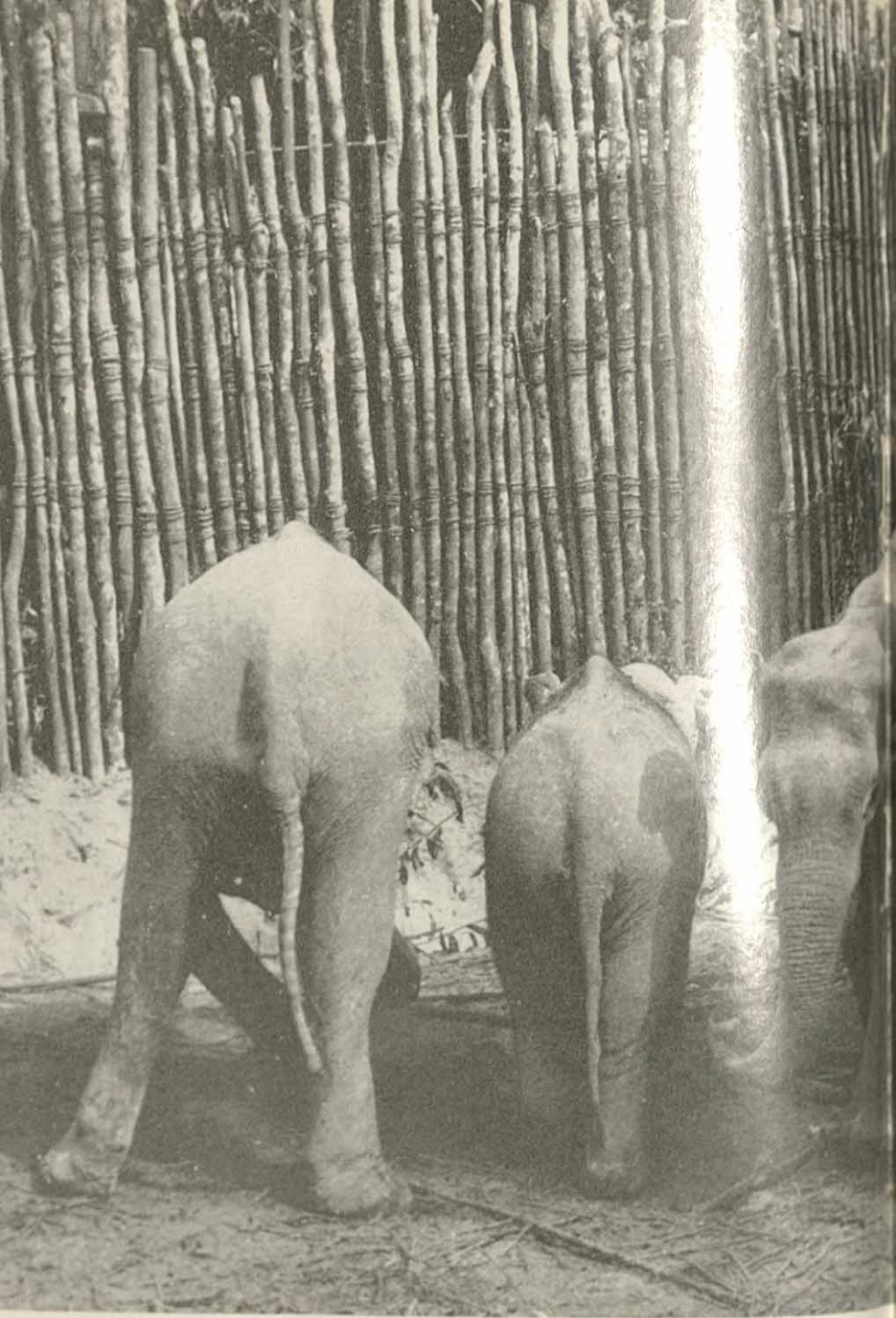


58a. The Forest Department elephant Deokali
with her newly-born baby Parboti on 6th February 1950

b. Taking her baby for a walk a few days later



59. The author has measured Parboti regularly,
both the circumference of her forefoot and her shoulder height
(the latter is double the former)

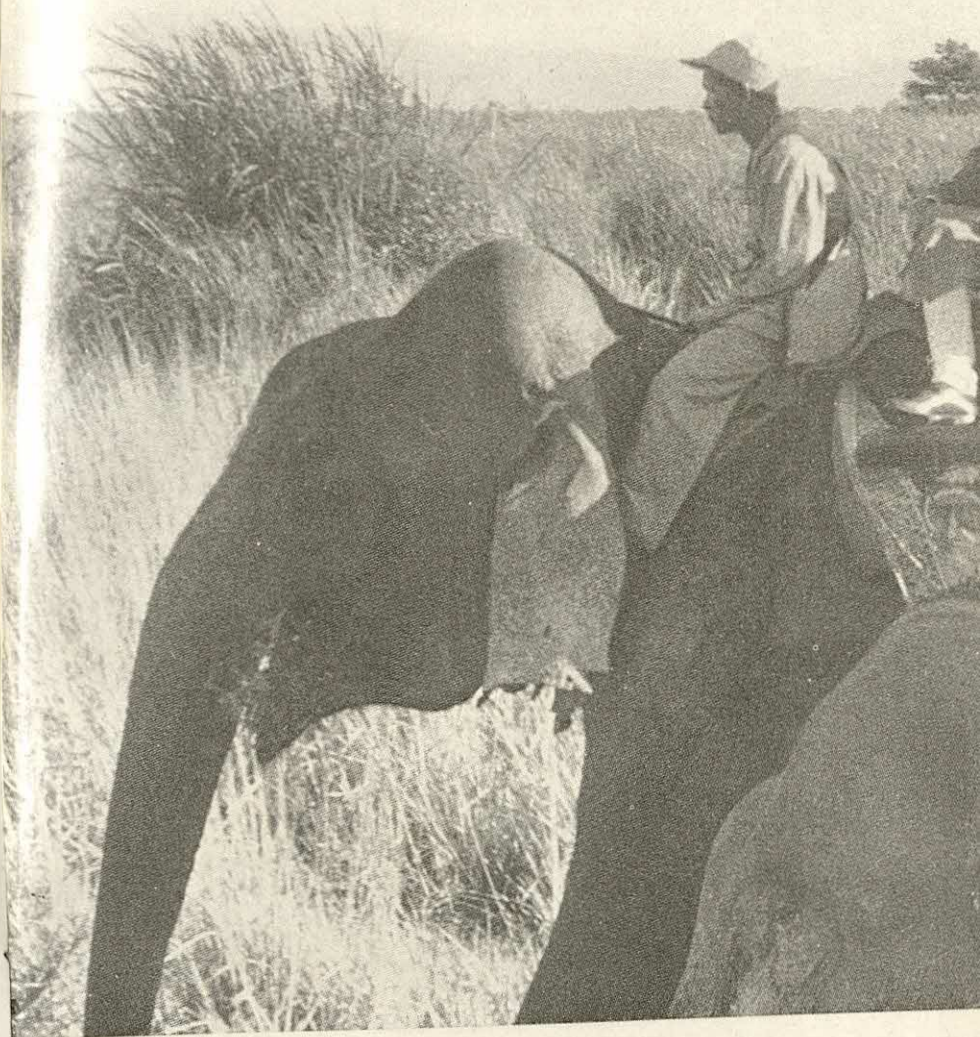




60 and 61. This wild herd, captured in a stockade, turned out to be a cow with four female calves. The youngest is Lakshmi, now in the London Zoo



62. The author at the London Zoo with Lakshmi in 1960
when she was ten years old



63. Jawaharlal Nehru during his visit to Kaziranga Sanctuary



64. On the day of Mr. Nehru's visit there was a wonderful sunrise, during which the Eastern Himalayas (110 miles away) could be clearly seen

Clearly the needs of human beings must come first. In the new India of today large-scale industrial development is taking place so that the standard of living will be raised. But material progress is not at an end in itself: sources of spiritual enjoyment such as the beauties of nature must be safeguarded.

In highly industrialized countries more and more people are turning to wild and unspoilt countryside for rest and recreation; and more and more tourists will visit India to see her scenic beauties and wild life. In fact tourism is already becoming an important industry in India and a valuable foreign exchange earner.

Large national parks as in North America and Africa are not feasible in this overcrowded country, but at least all the small sanctuaries and parks should be strictly maintained, and some new ones created.

As I see it, there can be no doubt that, at the present rate of cutting vegetation, overgrazing by domestic stock and killing of wild animals in India, by the time public opinion can rally in support of wise conservation of wild life there will be practically nothing left to conserve. There will be very little wild life left by the year A.D. 2000, only thirty-six years from now, except in zoological gardens.

The first to go will, generally speaking, be the larger mammals and birds, especially those which are edible. Smaller mammals and birds, particularly the latter which can escape by flying, will be the last to disappear.

Imagine the year 2000, with the only wild life consisting of those creatures which can adapt themselves easily to thickly populated areas, such as jackals, rats, mice, vultures, pariah and Brahminy kites, crows and sparrows!

How the inhabitants of the future India would miss the lovely sight of a snowy-white cattle egret gracefully alighting on the back of a rhino placidly grazing among the flowering reeds and grasses of Kaziranga! What would the Gir Forest be like if, bereft of its stunted trees, there were no noble lions and lionesses with their cubs to enrich our lives? Can one imagine Bandipur without its magnificent "bison", or Periyar without its lordly elephants, or Kanha without its elegant swamp deer? Or Bharatpur without its wonderful congregation of breeding water birds?

If the spectacular tiger, the proud peacock and all the other splendid denizens of the forests and grasslands were to cease to exist, then how dull life would be!

All this can and will happen, unless proper conservation measures can be taken in good time before it is too late. Of course it is not only an Indian but also a world problem, for which the World Wildlife Fund has been started in Western countries. In many parts of the world careful planning is being done to ensure the survival of wild life and wild places for future

generations.

I am not altogether pessimistic about the future. Much is being done, although very much more is necessary.

If nature conservation could be considered important in India as long ago as 300 B.C. and 242 B.C., it should surely be accepted as a first priority necessity at the present time. The existence of a sound nature and wild life conservation organisation in a country is a reliable indication of the stage of a country's progress and development. There is a very good chance that the leaders, planners and people of India will see the "writing on the wall", and that they will not fail today in their duty of preserving the country's heritage of forests and fauna for those of tomorrow.

Appendix of Sanctuaries and Zoos

1. The best months of the year for visiting India's sanctuaries

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Bandipur	4	4	4	5	5	4	3	3	3	3	4	4
Mudumalai	4	5	5	5	5	3	2	2	2	3	4	4
Periyar	5	5	5	4	4	3	2	2	2	2	3	4
Vedanthangal	5	4	3	2	1	0	0	1	2	3	4	5
Ranganthittoo	2	2	2	2	2	4	5	5	3	2	2	2
Bharatpur	2	2	1	1	1	1	4	5	5	5	2	2
Kanha	3	4	4	5	5	4	1	0	0	0	1	3
Shivpuri	4	5	4	4	4	4	5	4	4	4	4	4
Gir Forest	5	5	5	5	5	3	1	1	1	2	3	4
Chandraprabha	4	5	5	5	4	3	3	2	2	3	3	4
Corbett	3	4	5	5	4	0	0	0	0	0	1	2
Dachigam	1	1	3	4	5	5	5	5	5	5	3	1
Hazaribagh	4	5	5	5	5	3	2	2	2	2	3	4
Jaldapara	4	5	5	5	4	2	1	1	1	2	3	4
Manas	5	5	5	3	2	1	1	1	1	3	5	5
Kaziranga	4	5	5	4	3	2	2	2	2	3	4	4

- KEY
- 5 Best time
 - 4 Nearly as good
 - 3 All right, but less good
 - 2 Possible, but not fully recommended
 - 1 Just possible at times, not recommended
 - 0 Impossible, or not allowed, or closed

2. *Addresses to which inquiries should be sent by persons intending to visit India's wild life places*

BANDIPUR	The Divisional Forest Officer, Mysore City, Mysore, India
MUDUMALAI	The State Wild Life Officer, 136, Peters Road, Madras 14, India.
PERIYAR	The Wild Life Warden, Peermade, Kerala, India
VEDANTHANGAL	The State Wild Life Officer, 136, Peters Road, Madras 14, India.
RANGANTHITTOO	The Divisional Forest Officer, Mysore City, Mysore, India
ANDHRA PELICANRY	The Chief Conservator of Forests, Hyderabad, Andhra Pradesh, India.
BHARATPUR	The Divisional Forest Officer, Bharatpur, Rajasthan, India
KANHA	The Divisional Forest Officer, West Mandla Division, Mandla, Madhya Pradesh, India.
SHIVPURI	The Divisional Forest Officer, Shivpuri, Madhya Pradesh, India.
KUTCH	The Divisional Forest Officer, Bhuj, Kutch, Gujarat, India.
GIR FOREST	The Divisional Forest Officer, Gir Division, Junagadh, Gujarat, India.
CHANDRAPRABHA	The Divisional Forest Officer, Varanasi Division, Ramnagar P.O., Uttar Pradesh, India.
CORBETT	The Chief Wild Life Warden, Wazir Hasan Road, Lucknow, Uttar Pradesh, India.
DACHIGAM	The Chief Conservator of Forests, Srinagar, Kashmir, India.
HAZARIBAGH	The Divisional Forest Officer, Hazaribagh Division, Bihar, India.
JALDAPARA	The Divisional Forest Officer, Cooch Behar P.O., West Bengal, India.
MANAS	The Divisional Forest Officer, North Kamrup Division, Barpeta Road, Assam, India.
KAZIRANGA	The Divisional Forest Officer, Sibsagar Division, Jorhat P.O., Assam, India.

3. Zoological Gardens in India

ANDHRA	Zoological Gardens, Hyderabad, Andhra.
ASSAM	State Zoo, Gauhati, Assam.
BENGAL	<i>Zoological Gardens, Alipore, Calcutta, West Bengal.</i> Himalayan Zoological Park, Darjeeling, West Bengal.
DELHI	<i>Delhi Zoological Park, New Delhi.</i>
GUJARAT	<i>Zoological Hill Garden, Ahmedabad, Gujarat.</i> Sayaji Rao Garden Zoo, Baroda, Gujarat. Zoological Garden, Junagadh, Gujarat.
KERALA	<i>Zoological Garden, Trivandrum, Kerala</i> Zoological Garden, Trichur, Kerala.
MADHYA PRADESH	King George Zoological Park, Lashkar (Gwalior), M.P.
MADRAS	<i>Zoological Gardens, Madras, Madras.</i>
MAHARASHTRA	<i>Victoria Garden Zoo, Bombay, Maharashtra.</i> Peshwa Park Zoo, Poona, Maharashtra. Maharaj Bag Zoo, Nagpur, Maharashtra.
MYSORE	<i>Shri Chamarajendra Zoological Gardens, Mysore, Mysore.</i>
RAJASTHAN	<i>Zoological Garden, Jaipur, Rajasthan.</i> Zoological Gardens, Kotah, Rajasthan. Zoological Gardens, Jodhpur, Rajasthan Zoological Gardens, Bikaner, Rajasthan Zoological Gardens, Udaipur, Rajasthan
UTTAR PRADESH	<i>Zoological Gardens, Lucknow, Uttar Pradesh.</i>

Those zoological gardens which are larger and better developed are shown in *italics*: those which are smaller or less developed are shown in roman type. In all cases, the Officer in charge is designated "The Superintendent".

Glossary of Local Terms

atta: whole meal wheat flour

babul: a thorny tree (*Acacia arabica*)

bagh: a member of the cat family, usually a tiger or leopard

bakrwalla: a goat-herdsman

barasingha: twelve-pointer. Indian swamp deer in Madhya Pradesh, Kashmir stag in Kashmir

bauhinia: a flowering tree (*Bauhinia variegata*)

beat: a sub-division of a Forest Range, or a patch of jungle which is beaten in a shoot, or the actual beating of a jungle in a shoot

beater: a man employed in beating or driving out game in a shoot

bet: a hillock in the dry season, an island in the wet season, in the Rann of Kutch (pronounced as "bait")

bhainsa: buffalo

bheel: small lake (in north-east India), same as *jheel*

bokabokar: a sporting fish (*Barbus hexagonalepsis*)

bon gharasia: a domesticated elephant which has returned to the wild

bund: a dam, or embankment, or road running along either of these

buru: a mythical creature of the hills in N.E.F.A.

cattle-lifter: a tiger (or leopard) which kills cattle instead of (wild) deer, pig, etc.

chela: the younger bull accompanying a wild buffalo bull (lit. pupil, disciple, servant)

chowkidar: watchman

compound: the area of lawn of garden surrounding a bungalow or Rest House

D.F.O.: Divisional Forest Officer

Dewan: Chief Minister of a ruling Prince (in former days)

dhow: local sailing vessel

dun: a plateau in a valley, or a flat valley, in the foothills of the Himalayas

flame of the forest: a spectacular flowering tree (*Butea frondosa*)

ganesh: a bull elephant with only one tusk

gayal: domestic form of the *gaur*

gharial: the fish-eating species of crocodile (*Gavialis gangeticus*)

glang: a cross between a domestic yak and a cow (eastern Himalayas)

godown: warehouse

gond: an Indian swamp deer in Uttar Pradesh

goonch: a fish known as "the fresh-water shark" (*Bagarius bagarius*)

gujar: a nomadic herdsman of northern India

H.P.: Himachal Pradesh
hangul: Kashmir stag

I.B.W.L: Indian Board for Wild Life
I.U.C.N: International Union for the Conservation of Nature and Natural Resources

jheel: small lake (same as bheel in north-east India)

khedda: elephant catching, especially in a corral or stockade
kill: the animal, either wild or domestic, killed by a tiger or leopard
koi hai: lit. "anyone there?". Elderly Britishers who have lived in India are sometimes known as "Old koi hais"
koonki: a trained elephant used in elephant catching operations
kusum: a tree with pale mahogany-coloured leaves in the spring (*Schleichera trijuga*)

M.P.: Madhya Pradesh
machan: a small platform, often built in a tree, for shooting or photographing from
mahout, mahawat: elephant driver
mahseer: a sporting fish (*Barbus tor*)
maidan: a grassy plain
makhna: the tuskless variety of male (Indian) elephant
maldhari: a professional grazier in north-west India
man-eater: a tiger (or leopard) which kills and eats humans
man-killer: a tiger (or leopard) which kills but does not eat humans
mithun: a north-east India term for the gaur (*Bos gaurus*), or domestic form gayal
monsoon: annual rainy season
mugger: common Indian crocodile (*Crocodilus palustris*)
musth: a temporary functional derangement in elephants (normally in males) accompanied by a black discharge from the musth glands behind the eyes

N.E.F.A.: North-East Frontier Agency
nulla: a small ravine or stream

peck order: social rank or order of strength among mammals or birds
pheow: the warning note of a jackal, or a jackal believed to accompany a tiger to warn it of danger
phumdi: the mat of humus floating on water (in Manipur)

Rajpramukh: Governor of a State in India before the recent reorganisation of States.
Range Officer: the Forest Officer in charge of a Range, which is a sub-division of a Forest Division
rann: a desert, sandy or muddy area, or salty waste (pronounced as "run")

sahib: an honorific affix, an honorific way of referring to a superior
sal: a hardwood tree (*Shorea robusta*)
sangai: Manipuri for brow-antlered deer
seladang: Malayan name for gaur or "Indian bison" (*Bos gaurus*)

shikar: shooting, hunting

shikari: a person who indulges in shooting. More often refers to a paid professional tracker

shisham: a tree with bright pale green leaves in the spring (*Dalbergia sissoo*)

shola: a thickly wooded valley in the hills of south India

shou: the Sikkim stag

simul: the Indian silk-cotton tree (*Bombax malabaricum*)

surra: a pernicious disease affecting horses (and cattle)

syce: a groom

tal: a lake in the mountains of north India

terai: moist country a few miles south of the base of the Himalayas

U.P.: Uttar Pradesh

ulu: thatch or sun grass (*Imperata sp.*)

yeti: a mythical creature of the central Himalayas

zho: a cross between a domestic yak and a cow (west and central Himalayas)

Bibliography

- ALI, SALIM: *The Book of Indian Birds*, 6th edition (1961)
Indian Hill Birds (1949)
- BERG, BENGT: *Junglen* (1933)
Tiger Und Mensch (1935)
- BRANDER, A. A. DUNBAR: *Wild Animals in Central India* (1923)
- CHAMPION, F.W.: *With a Camera in Tiger-Land* (1927)
The Jungle in Sunlight and Shadow (1934)
- CORBETT, JIM: *Man-Eaters of Kumaon* (1944)
- KOFFLER, YLLA: *Animals in India* (1958)
- PRATER, S.H.: *The Book of Indian Animals* (1948) (2nd revised edition now in preparation)
- SHEBBEARE, E.O.: *Soondar Mooni* (1958)
- STOCKLEY, C.H.: *Stalking in the Himalayas and Northern India* (1936)
- VAIDYA, SURESH: *The Jungle Lies Ahead* (1958)
- For English and scientific names of mammals and birds, two standard and internationally-accepted checklists have been closely followed in the book. These are:
- ELLERMAN, J.R. AND MORRISON-SCOTT, T.C.S.; *Checklist of Palaearctic and Indian Mammals* (1951)
- RIPLEY S. DILLON: *A Synopsis of the Birds of India and Pakistan* (1961)

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